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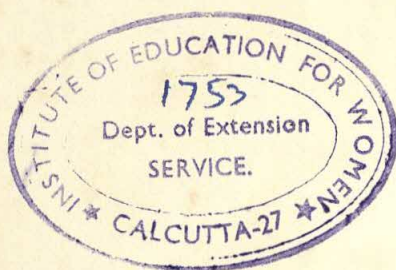
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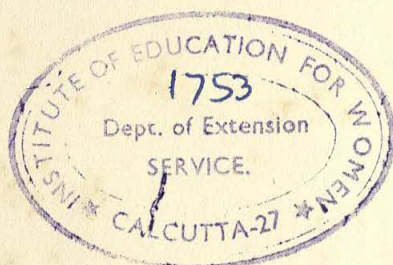
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School Health Sourcebook



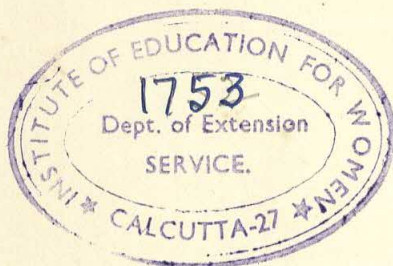
SCHOOL HEALTH

Sourcebook

Compiled by

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STANFORD UNIVERSITY PRESS, STANFORD, CALIFORNIA
LONDON: GEOFFREY CUMBERLEGE, OXFORD UNIVERSITY PRESS

STANFORD UNIVERSITY PRESS
STANFORD, CALIFORNIA

PUBLISHED IN GREAT BRITAIN AND INDIA BY GEOFFREY CUMBERLEGE,
OXFORD UNIVERSITY PRESS, LONDON AND BOMBAY

HENRY M. SNYDER & COMPANY, INC.
440 FOURTH AVENUE, NEW YORK 16

W. S. HALL & COMPANY
510 MADISON AVENUE, NEW YORK 22

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PRINTED AND BOUND IN THE UNITED STATES
OF AMERICA BY STANFORD UNIVERSITY PRESS

Library of Congress Catalog Card Number: 55-9101

Preface

The *School Health Sourcebook* is intended to give the reader a comprehensive overview of the school health program as it is represented in the professional literature on this subject during a period of ten years. With but a few exceptions the editor has selected articles on school health that have appeared in various journals, bulletins, special reports, and comparable sources between the years from 1945 to 1955.

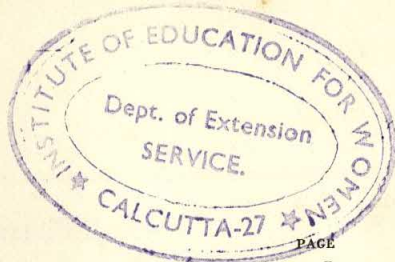
From this relatively current material 400 articles were chosen from about 2,000 readings on school health for inclusion in the *Sourcebook*. These 400 abstracted articles were secured from 143 different sources and represent the research, experience, observation, or opinion of more than 400 different authors, committees, commissions, and organizations of various kinds.

It is felt by the editor that the *Sourcebook* will be of most value to school administrators, health educators, physicians, public health officers, school and public health nurses, parent-teacher groups, physical educators, and graduate students in health education classes. Others with an interest in school health may also find the volume useful.

The preparation of the manuscript for the *School Health Sourcebook* was made possible by a fellowship grant from a Western foundation that prefers to remain anonymous. Appreciation of this assistance is hereby gratefully acknowledged.

OLIVER E. BYRD

June 4, 1955



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Chapter I

Definitions, Resolutions, and Policies

The Joint Committee on Terminology in Health Education agreed in 1951 upon nine definitions that should be a contribution to better understanding of the school health program.

The National Committee on School Health Policies produced in 1945 a report which constitutes one of the milestones in the progress of school health programs. The report emphasized that health is a primary objective of modern education. Members of the committee recalled that health was named as the first of the seven cardinal objectives of education in the 1918 report of the Commission on the Reorganization of Secondary Education and that since that date many other commissions and committees have arrived at the same conclusion.

A committee of the Educational Policies Commission and the American Association for Health, Physical Education, and Recreation recommended in 1946 that there should be national provision for a minimum health program for every child regardless of where he lives.

The Legislative Committee of the American Association for Health, Physical Education, and Recreation drafted a sample state law in 1947 to provide for the organization, direction, and supervision of courses in health, safety education, and physical education, and to provide for recreation, including camping, in the public elementary and secondary schools of each state. In respect to health and safety instruction, the recommended school health law would make it compulsory that all pupils attend daily classes of graded health and safety education in all elementary schools and that high schools should offer as a minimum a one-year course of health and safety instruction daily.

The significance of health as one of the objectives of general education in institutions of higher learning was emphasized in 1947 by the President's Commission on Higher Education. According to this important group the colleges and universities of the United States are doing far less than they should to dispel the ignorance that lies at the root of the ill health of much of our population.

The American Medical Association, through designated representatives, has consistently encouraged the development of school health programs throughout the United States, and has stated from time to time the reasons why schools should have such activities in the curriculum.

In various states committees and commissions have given recognition to health as an objective of education and as a means to better education of the child. An example of such acknowledgment is the report of a state-wide committee in California which worked for three years to develop a framework

for public education in that state. This report brings out the relationship of health to the realization of individual capacities and expresses the viewpoint that education for democratic living must develop the concept that people throughout the world have common needs, among which health and food are specifically indicated.

Various other organizations and committees have suggested platforms for health education and recommended expansion of school health services.

In 1948 the American Public Health Association passed a resolution favoring the principle of co-operative planning of health programs which involves children of school age; increased federal support for the furnishing of nourishing noon meals at school and the development of a plan of allocating tax moneys for educational purposes through laws that are not deleterious to the health of children.

In 1952 at a Joint Meeting of the American Public Health Association and the American School Health Association various leaders in the field of public health and school health recommended that health education be made more of a living experience for the student, that the health course should carry the same recognition regarding credit and requirements as other basic courses, that handicapped children should be helped to participate—to the extent of their capabilities—in activities with normal children, and that well-publicized, written plans for intelligent action in emergencies and the prevention of communicable disease should be developed.

1

School Health Terminology

The Joint Committee on Terminology in Health Education, representing the American Association for Health, Physical Education, and Recreation agreed in 1951 upon nine definitions that should be a contribution to the development and improvement of school health activities.

1. *School health program.*—The school procedures that contribute to the understanding, maintenance, and improvement of the health of pupils and school personnel, including health services, health education, and healthful living.

2. *School health services.*—The school procedures which are established to (a) appraise the health status of pupils and school personnel, (b) counsel pupils, parents, and other persons involved, concerning appraisal findings, (c) encourage the correction of remediable defects, (d) help plan for the health care and education of handicapped children, (e) help prevent and control disease, and (f) provide emergency care for the sick or injured.

3. *Health appraisal.*—That phase of school health service which seeks to assess the physical, mental, emotional, and social health status of individual pupils and school personnel through such means as health histories, teachers'

and nurses' observations, screening tests, and medical, dental, and psychological examinations.

4. *School health counseling*.—The procedures by which nurses, teachers, physicians, guidance personnel, and others interpret to pupils and parents the nature and significance of a health problem and aid them in formulating a plan of action which will lead to solution of the problem.

5. *School health education*.—The process of providing learning experiences for the purpose of influencing knowledge, attitudes, and conduct relating to individual and group health.

6. *Healthful school living*.—A term which designates the provision of a safe and healthful environment, the organization of a healthful school day, and the establishment of interpersonal relationships favorable to the best emotional, social, and physical health of pupils.

7. *Health co-ordination*.—The process of developing relationships, within the school health program and between school and community health programs, which contribute to harmonious action in the solution of problems relating to pupil health.

8. *School health council*.—A representative group of persons organized for the purposes of study, planning, and action aimed at the identification and solution of school health problems.

9. *School health educator*.—A person specially qualified to serve as a teacher, consultant, co-ordinator, or supervisor of health education in an individual school or a school system.

2

Suggested School Health Policies

The National Committee on School Health Policies of the National Conference for Co-operation in Health Education produced an official report in 1945 which constitutes another milestone in the progress of school health.

The report was divided as follows into six parts: Section I, "Provisions for Healthful School Living"; Section II, "Health and Safety Instruction"; Section III, "Services for Health Protection and Improvement"; Section IV, "Health Aspects of Physical Education"; Section V, "Education and Care of the Handicapped"; and Section VI, "Qualifications of School Health Personnel."

The report emphasized that health is a primary objective of modern education. Health was named as the first of the seven cardinal objectives of education in the 1918 report of the Commission on the Reorganization of Secondary Education. Since that date many other commissions and committees have arrived at the same conclusion.

Some of the points discussed in this report were as follows: responsibility of parents for the health of their children; school health councils; co-operation

with community health councils; standards for safety and sanitation; mental and emotional health; the health of school personnel; school food service; the school instructional program; elementary school health instruction; health instruction in the secondary school; school participation in community health education; first aid; prevention and control of communicable diseases; cumulative health records; teacher observations of pupil health; screening tests; psychological examinations; medical consultations and examinations; interpretation of health needs to students, parents, and teachers; community resources for health; health guidance; dental health; extent of health services; the physical education class program; interschool athletic programs; health safeguards in the athletic program; education and care of the handicapped; qualifications of school health personnel; pre-service and in-service training of specialized personnel and teachers; and other problems.

In concluding the report the committee says that progress can be made in many directions. Schools can carry out the following suggestions:

1. Organize a school health council.
2. Make provision for healthier school living by raising the standards of inspection for safety and sanitation, by employing more understanding and emotionally stable teachers, by paying more attention to the health of school personnel, and even by serving better food.
3. Improve the quality of health and safety instruction by according more time, securing better qualified teachers, granting more scholastic credit, and providing more adequate teaching materials.
4. Clarify and sharpen their programs for the prevention and control of communicable diseases and avoidable accidents.
5. Institute wider programs of health counseling, including keener teacher observation, more frequent screening tests, and more useful medical and psychological examinations.
6. Enforce more intelligent precautions in physical education and athletic programs.
7. Identify sooner and provide more sensibly for handicapped children.
8. Provide in-service education to help teachers to understand the health problems of children.
9. Participate in programs of parent and community health education.
10. Seek qualified medical advisers, nurses, health educators, and other necessary specialized health personnel.

3

Health and Physical Fitness for All American Children and Youth

A committee of the Educational Policies Commission and the American Association for Health, Physical Education, and Recreation recommended in 1946 that there should be nation-wide provision for the following minimal

health program for every child in our country, whether in a large city, a small town, or on the farm:

1. A complete physical examination at least once every two years, including careful attention to vision, hearing, and teeth.
2. Prompt and persistent follow-up of the physical examination with successful provision for all needed corrective and protective measures.
3. Instruction based on scientific information which will lead to the formation of desirable habits, attitudes, and appreciations in physical and mental health.
4. Opportunities for play and exercise which will provide needed physical activity and develop good muscular co-ordination.
5. Participation in a rounded program of recreational activities which will carry over into after-school life.

4

A Suggested School Health Law

The Legislative Committee of the American Association for Health, Physical Education, and Recreation drafted a sample state law in 1947 to provide for the organization, direction, and supervision of courses in health, safety education, and physical education, and to provide for recreation, including camping, in the public elementary and secondary schools of each state.

Sections 5, 6, and 7 are specifically concerned with the school health program and are given herewith.

SECTION 5

Health and safety instruction.—All pupils enrolled in the elementary schools of the state shall be required to attend daily graded classes of health and safety education. The length of the period is to be consistent with the administrative policy throughout the school.

High schools shall offer, as a minimum, a one-year course of daily health and safety instruction adapted to individual needs. Health guidance and counseling are essential and must be provided as part of the instructional services. The teacher load should be one teacher per thirty-five pupils.

SECTION 6

Health services.—All pupils shall be required to have a thorough medical examination upon entrance into school and every three years thereafter in elementary schools, and at entrance to secondary school and at least twice thereafter to the end that remediable defects and handicaps can be discovered and corrected. In addition, the health service program shall provide immunization and other measures necessary to prevent and control communicable disease. Pupils shall be assigned to physical education activities in accordance with the entering or subsequent physical or medical examination. Adequate

medical examinations shall be provided for all pupils engaging in inter-scholastic athletics.

SECTION 7

Credit.—Credit shall be granted for health education and physical education on the same basis as for other courses receiving credit and required for promotion and graduation. State colleges and universities shall accept such high school credit as part of the entrance requirement, and other colleges and universities shall be urged to accept this credit as part of their entrance requirement.

5

A Suggested Platform for Health Education

The Health Education Division of the American Association for Health, Physical Education, and Recreation published in 1947 the following suggested platform for health education:

1. A program of health education, based upon accepted scientific facts, should be available to individuals of all ages, all races, all nationalities, and all creeds.

2. Emphasis should be placed on the functional use of scientific facts adapted to the educational level, interests, and needs of the countless natural groups of every community.

3. School health education and community health education are essential parts of a well-balanced program. Neither can function with full effectiveness without the other.

4. Every community should have an organization through which all health education activities are co-ordinated and in which all official, voluntary, industrial, and civic groups concerned with child or adult health, and the general public can plan together and carry into action a total health education program suited to the needs of all the people.

5. Trained leadership is necessary for efficient operation of a school or a community health education program. Qualification of persons responsible for community health education programs and for elementary, secondary, college, and university health education should include professional training in health and education.

6. One or more qualified educators or health co-ordinators should be available in every health department and every school system to work with all school and community groups, and similar workers should be available in other organizations, such as the voluntary agencies, agricultural groups, and industry.

7. Adequate medical, dental, and nursing services should be provided for all school children. The scope and administration of these services should be planned co-operatively by the official state and local agencies concerned with

these programs. In the implementation of these services, particularly on the local level, there should be co-operative planning by school, public health, and other official agencies. The operation of these services should be co-ordinated with health teaching and should provide educational experiences for the child, parent, and teacher which result in changed behavior.

8. Every child should attend school in a building which is safe, sanitary, pleasant, and healthful, and should have a daily schedule which is in accordance with sound health practices.

9. Advanced training in public health and education for persons especially interested in and fitted for the field of health education should be encouraged through the provision of fellowships or other financial assistance.

10. All teachers in the elementary and secondary schools should have adequate preparation in the field of health so that they may teach effectively and contribute to a well-integrated curriculum.

11. Community health education is the responsibility not only of the health department, but also of the schools, voluntary agencies, and other groups such as agriculture, welfare, and industry.

12. A major part of this program should be devoted to helping the people of a community organize in order to find and solve their own health problems in accordance with democratic principles.

13. The community health education program should provide persons of all ages with accepted scientific facts adapted to their needs, interests, and educational levels.

14. There should be continuous evaluation of all phases of the total health education program, including appraisal of the adequacy of the program and the effectiveness of the methods and materials used.

15. There should be a thorough analysis of existing health education tools and materials, followed by co-ordinated planning for their production, use, and evaluation on the part of universities, health and education departments, voluntary agencies, and commercial groups.

6

A.P.H.A. Resolutions on School Health

The following resolutions pertaining to school health were unanimously adopted by the American Public Health Association at the Seventy-sixth Annual Meeting in Boston on November 10, 1948:

WHEREAS, The American Public Health Association is concerned with the health of the total community, and

WHEREAS, It has become increasingly clear that the school health program can contribute significantly to the over-all public health program, and

WHEREAS, Both education and health departments have great interest in the health of the school age child, and

WHEREAS, It is becoming increasingly apparent that where there is a high

degree of mutual understanding and co-operation between departments of health and education, with the resultant pooling of the resources of both departments, good health programs are being developed; therefore be it

Resolved, That the American Public Health Association join with the American Medical Association and other groups in approving the principle of co-operative planning of health programs which involve children of school age.

WHEREAS, The allocation of the moneys to schools and school districts is based upon a variety of formulae, among which is the classroom unit as computed by average daily attendance, and

WHEREAS, If funds are allotted on the basis of average daily attendance school officials find it to their advantage strongly to promote daily attendance of all children at school, and

WHEREAS, The encouragement of children to attend school when they are ill has deleterious effects upon the health of individual children and may be responsible for the spread of communicable disease; therefore be it

Resolved, That the American Public Health Association join with the National Education Association, the American Medical Association, and other groups in decrying this practice; and be it further

Resolved, That the National Council of State School Officers and the Association of State and Territorial Health Officers be urged to develop a plan of allotting tax moneys for educational purposes through laws that are not deleterious to the health of children.

WHEREAS, The service of nourishing noon meals at school is an important part of a program of health services and health education for children of school age, and

WHEREAS, The benefits of school lunches are freely available to all children only where public funds defray a substantial part of the cost of food, service, and administration, and

WHEREAS, Federal, state, and local appropriations during recent years have not increased sufficiently to keep pace with rising costs of food and labor for preparing luncheons; therefore be it

Resolved, That the American Public Health Association hereby endorses increased federal support under the National School Lunch Act and adequate state appropriations for matching federal funds and for the efficient operation of the program.

7 *Policies for the Promotion of Healthful School Life*

At the 1952 joint meeting of the American Public Health Association sections on maternal and child health, public health education, public health

nursing, school health, and health officers with the American School Health Association, various aspects of the school program were discussed.

Helen M. Starr, Ph.D., director of health, physical education, and recreation for the Minneapolis public schools, declared that many schools are teaching health rather than helping boys and girls to live healthfully through sound instruction.

Dr. Starr asked: "Why not tie in the aspects of health service and healthful school living with the program of health and safety education in revising current policies?"

Dr. Starr advocated a major policy restatement on the objective of health education as well as other parts of the total school health program. Primarily, a policy revision should state the understanding, attitudes, and skill to be achieved by health education in a complete curriculum.

Dr. Starr also maintained that the health course should carry the same recognition regarding credit and requirements as other basic courses.

Arthur J. Lesser, M.D., of the Federal Security Agency, emphasized that handicapped children should be helped to participate, to the extent of their capabilities, in activities with normal children.

He emphasized that although handicapped children may find the problems of growing up accentuated because of their disabilities, they can best face the rest of the world if they learn to do so from early childhood.

For children too handicapped for education in regular classes, special classes are becoming increasingly more common. The best type of school situation for the handicapped child, however, must be determined by each individual's requirements, Dr. Lesser stated.

Handicapped children should begin their formal education earlier than normal children. When children have serious neuromuscular or hearing handicaps, the preschool years become particularly important for growth and development.

Carl A. Wilzbach, M.D., commissioner of health in Cincinnati, said in discussing school health protection and improvement that formulation of a well-publicized written plan for intelligent action in emergencies and protection of children against neglect as well as prevention of communicable disease would do much to reduce the unjustified criticism of schools.

The school personnel, with the help of local medical societies, should draw up blueprints to solve problems, such as the safe transfer of responsibility to parents or other persons when emergencies occur, or when children are injured or taken ill and parents cannot be reached.

Accidents and illnesses are bound to occur in schools and a program of action that includes teacher training in first-aid procedures can prevent further injury and assure the family that needed medical services would be obtained as promptly as possible, according to Dr. Wilzbach.

8

***Health Viewpoints of the President's Commission
on Higher Education***

In 1947 the President's Commission on Higher Education reported to the President of the United States on the functions of higher education in our democracy and the means by which they can best be performed. The commission had worked for approximately one and one-half years in a study of the problem before making the report.

The commission pointed out that it is the task of general education to provide the kinds of learning and experience that will enable the student to obtain certain basic outcomes, among which is the maintenance and improvement of his own health, and co-operation, actively and intelligently, in the solving of community health problems. Health learnings and experiences are thus specifically mentioned as one of the eleven major objectives of general education.

In discussing health as an objective of general education the commission stated that in any society human resources are of paramount importance, and when the physical health and vitality of any large portion of the people are less than they might be, these resources are seriously impaired. The mental vigor and spirit of a people are conditioned by the state of physical health.

According to the commission, our colleges and universities are doing far less than they might to dispel the ignorance that lies at the root of the ill health of many of our people. The commission states that what is needed is a course that deals specifically and explicitly with the information, attitudes, and habits the student needs to maintain and improve his own health and that of his community. An important phase of instruction to this end will be emphasis on the fact that health is more than a personal problem, that it has social implications, and that the individual owes it to society no less than to himself to keep his health and energy at their peak.

9

Why Schools Should Have a Health Program

Patricia Hill, consultant in school health education for the California State Department of Education, reported in 1955 on the first California Conference on Physicians and Schools which was held in that state.

At this conference Fred V. Hein, Ph.D., consultant in health education for the American Medical Association, gave the following reasons why schools should have a health program:

1. Some children come to school with health problems that interfere with their ability to learn effectively. Methods to discover such blocks to learning and to encourage correction to bring about adjustment to them are essential.
2. In even the best-organized schools a certain amount of sudden illness

and some accidents are bound to occur. This makes procedures for dealing with emergencies, including large-scale disasters, a practical necessity.

3. Communicable disease is likely to spread readily among children gathered together in the close proximity of the schoolroom. This obligates the school to institute and practice appropriate preventive and control measures.

4. During the school year children are compelled by law to spend several hours a day within the school and its environs. This, in turn, places a responsibility upon the school to provide a safe and healthful environment—mental and emotional as well as physical.

5. The school years present a unique opportunity for health education; tomorrow's citizens are grouped in an instructional situation during the formative period of their lives. Unless a golden opportunity is to be lost, this demands well-designed and progressive health education throughout the school grades.

10 *Health in a Framework for Public Education in California*

The California State Department of Education reported in 1950 on the conclusions and recommendations of a state-wide committee that had been working for three years to develop a framework for public education in California.

This statement includes the purposes for which schools have been created and maintained, the scope of services which should be offered, and the principles which should apply to the organization and conduct of these services.

The committee states that one of the purposes of education in California is to achieve full realization of individual capacities. In this connection the understanding of the essential facts concerning health and disease, the protection of the health of others, as well as of the individual himself, and working to improve the health of the community are measures specifically mentioned as being significant in the developing of individual capacities.

In the section dealing with teaching and learning the committee expresses the viewpoint that education for democratic living must develop the concept that a good citizen is one who recognizes that people throughout the world have common needs, including food, clothing, shelter, health, education, and recreation, which must be satisfied if universal peace is to be achieved.

In addition to specific mention of the importance of health in education, the committee has stressed by implication that the achievement of other goals cannot be expected if attention is not given to health.

Chapter II

Pupil Health Problems

The health problems of pupils are many and varied. From the standpoint of deaths, accidents are the Number One health problem of school children in the United States. About 6,000 deaths occur annually among children between the ages of five and fourteen years. This loss of life from accidents is nearly twice the total of young lives taken by leukemia and other cancers, acute poliomyelitis, and pneumonia and influenza. Accidents now account for fully one third of all deaths at the elementary school ages.

Pupil health problems of a nonfatal nature may be discovered by special studies conducted in the schools. One such California study of more than 13,000 absences due to illness which accounted for more than 30,000 days of absence from school showed that the leading health problems in rank order of frequency and severity were as follows: respiratory illnesses, other communicable diseases, digestive disorders and disturbances, organic and functional disorders, accidents, skin conditions, and other medical conditions.

Other studies of school absences tend to confirm the importance of respiratory illnesses and children's diseases in general as a cause of absence from school due to illness.

Medical and dental examinations of school children are another source of information regarding pupil health problems. One such study in Philadelphia covered 13,113 school children and showed that dental decay, defective vision, diseased tonsils, malnutrition, and poor posture were five major health problems of pupils in that community. Many other kinds of health problems were revealed by these examinations.

It is not to be expected that the health problems of pupils would be similar in all communities. Geographical, economic, racial, and other factors may be expected to be significant in determining the kinds of health problems that will be found among pupils in any given area. For example, studies conducted by the Michigan Department of Health have shown that ground waters of that state differ considerably in their content. In some counties the deficiency of iodine is so great that goiter is widely prevalent unless medical and public health precautions are taken. The accomplishment of the Michigan State Department of Health and the State Department of Public Instruction in educating the citizens of Michigan to a need for using iodized salt represents an outstanding example of how a specific health problem of the pupils within a given area may be recognized and prevented. Virtual elimination of endemic goiter in a little less than 30 years is one of the striking achievements in Michigan's long history of public health progress.

Studies of the mental health of school children reveal that there is some

difference of opinion among teachers and psychiatrists in respect to the interpretation of different kinds of childhood behavior. The mental hygienist places major emphasis on unhappiness, depression, suspicion, fearfulness, and the lack of social adjustment. The classroom teacher is apt to give top ranking to stealing, heterosexual activity, cheating, and lying.

It is to be expected that the health problems of students would differ according to the age and grade level of the pupils. Among college women, for example, chronic fatigue, frequent colds, skin disorders, and painful menstruation constitute leading health problems. Among college men, lack of sufficient sleep, underweight, and lack of physical exercise have been found to be most prominent.

Some serious health problems, such as tuberculosis, can be found among any group of students on a more limited scale so far as frequency is concerned.

The health problems of students must also be considered from the community and long-range viewpoints. The individual chapters of this source-book give indications of other types of health problems with which pupils are confronted. In some communities alcohol and narcotics may constitute very real health problems. In other regions malnutrition may be widely prevalent, or still other problems may be paramount. On the international scene, health problems which are relatively unknown in the United States may be encountered among pupils.

11 Accidents Are Greatest Threat to School Children

Statisticians of the Metropolitan Life Insurance Company state that accidents in our country claim about 6,000 lives annually among children at ages five to fourteen years.

This loss of life from accidents is nearly twice the total of young lives taken by leukemia and other cancers, acute poliomyelitis, and pneumonia and influenza. Accidents now account for fully one third of all deaths at the elementary school ages, whereas about fifteen years ago the proportion was only one fifth.

The cases of accidental death of 476 children between the ages of five and fourteen years inclusive are given in the accompanying table. The accidental deaths occurred among policyholders of the Metropolitan Life Insurance Company during 1951.

Type of Accident	Total Deaths	Male Deaths	Female Deaths
Total accidental deaths.....	476	384	92
Motor vehicle (total).....	186	139	47
Run over or hit by motor vehicle.....	145	115	30
Riding bicycle	30	28	2
Running into or playing on street or highway....	22	20	2

Type of Accident	Total Deaths	Male Deaths	Female Deaths
Motor vehicle (<i>Continued</i>)			
Crossing street or highway.....	20	11	9
Walking in street or highway.....	8	7	1
Coasting on sled.....	6	5	1
Other and not specified.....	59	44	15
Collision of two or more motor vehicles.....	18	10	8
Other and not specified.....	23	14	9
Other transport* (total).....	15	12	3
Railroad	7	6	1
Bicycle	5	3	2
Other	3	3	..
Drowning (total).....	144	129	15
Swimming	27	25	2
Wading	24	18	6
Fell into river, creek, canal.....	24	24	..
Water transportation	23	20	3
Small boat	20	17	3
Playing on thin ice.....	11	10	1
Other and not specified.....	35	32	3
Fire, explosion of combustible material, and burns			
(total)	45	26	19
Conflagrations (dwellings)	25	13	12
Burns	20	13	7
Playing with or near flammable liquids.....	4	4	..
Clothing ignited by stove, heater.....	4	2	2
Other and not specified.....	12	7	5
Firearms (total).....	23	23	..
Playing with gun.....	7	7	..
Hunting	5	5	..
Shooting at logs, other objects.....	3	3	..
Other and not specified.....	8	8	..
Falls (total)	17	14	3
Hanging, choking, etc. (total).....	14	13	1
Hanging or strangulation while playing with ropes, etc.	8	8	..
Other and not specified.....	6	5	1
Struck or crushed by falling objects (total).....	8	7	1
Collapse of building while playing.....	4	4	..
Struck by falling objects not specified.....	4	3	1
All other accidents (total)	24	21	3
Electric current	4	4	..

* Except those involving collision with motor vehicles.

Type of Accident	Total Deaths	Male Deaths	Female Deaths
Absorption of poisonous gas.....	4	2	2
Cutting and piercing instruments.....	4	4	..
Lightning	3	2	1
Other and not specified.....	9	9	..

12

13.113 School Absences Due to Illness

Ralph Mason, Ed.D., vice-principal of the Palo Alto (California) Senior High School reports a study of 13,113 absences from school due to illness in five Redwood City (California) elementary schools during the school year 1949-50.

It was found that 3,252 pupils had experienced more than 13,000 absences due to illness. These illnesses accounted for 30,403 days of absence from school.

The leading causes of absence from school due to illness were found to be, in rank order of frequency and severity, as follows: respiratory illnesses, other communicable diseases, digestive disorders and disturbances, organic and functional disorders, accidents, other medical reasons, and skin conditions.

The greatest frequency of illness occurred at the kindergarten level and decreased consistently, grade by grade, to a lowest level of frequency in the seventh grade. Respiratory illnesses and communicable diseases were highest in the kindergarten and first grade and lowest in the sixth, seventh, and eighth grades.

The eighth grade had the highest rate of injuries and accidents, with the boys suffering more injuries than the girls.

The kindergarten and first grade had the highest incidence of skin conditions causing absence from school. Digestive diseases and disturbances reached their peak at the fourth grade.

Respiratory disorders outranked by a considerable margin other causes of absence from school due to illness. Sixty-four percent of the illnesses were respiratory in nature and accounted for 64 percent of the days absent from school. Certain other communicable diseases such as measles, whooping cough, chicken pox, mumps, and scarlet fever accounted for approximately 4 percent of the illnesses but caused 11 percent of the absences from school in terms of days. Approximately 12 percent of the pupils suffered digestive disturbances but this accounted for only 7 percent of the absences from school. Accidents accounted for 5 percent of the total number of cases and also 5 percent of the days absent from school. Skin disorders such as boils, eczema, impetigo, scabies, and so on accounted for 1 percent of the total number of cases and 1 percent of the days absent from school. More serious

organic diseases such as thyroid disorders, diabetes, heart conditions, and rheumatic fever accounted for only one half of 1 percent of the cases but caused 2 percent of the days absent from school. Various miscellaneous conditions accounted for other health disorders resulting in absence from school.

13 *Causes of School Absences in Los Angeles*

Alfred S. Lewerenz and John L. C. Goffin, of the Los Angeles City School System, reported in 1945 on a statistical study of the causes of 4,528 absences in the Los Angeles City School District for the year 1943-44. The study was based on reports from schools in which monthly attendance fell below 90 percent.

The following table indicates that illness accounted for approximately 77 percent of all absences.

Cause of Absence	Percentage of All Absences
Colds and influenza.....	33.9
Measles	16.5
Bad weather	13.2
Chicken pox	9.8
Mumps	9.7
Transient population	3.2
Attendance in special schools.....	2.8
Scarlet fever	2.0
Seasonal work	1.4
Scabies	1.2
Pediculosis	1.1
Whooping cough	0.9
Pinkeye	0.2
Impetigo	0.2
Other illness	1.6
Other causes	2.2

14 *School Medical Examinations in Philadelphia*

Drs. Owen and Weaver, of Philadelphia, reported in 1946 on a study of 13,113 complete physical examinations of Philadelphia school children, covering the school years 1943 to 1945. During the same period 326,129 pupils were partially examined according to requirements of the school code which prohibits removal of clothing.

Of the latter group, 41.5 percent were considered normal. Nearly 12 percent more children were found to have physical defects when sufficient clothing was removed for a thorough examination (on written consent of the parent or guardian).

The most prevalent defects found in this complete medical examination of the 13,113 pupils were as follows:

Defect	Percent
Dental decay	28.0
Defective vision	8.4
Diseased tonsils	7.9
Malnutrition	7.7
Poor posture	7.3
Flat feet	5.7
Skin condition	4.8
Nasal obstruction.....	4.0
Overweight	3.9
Unclean teeth	3.5
Phimosis	3.2
Organic heart disease.....	1.7
Malocclusion	1.5
Enlarged lymph nodes.....	1.1
Hernia	1.1
Abnormal nervousness	1.0
Strabismus (cross-eyes)	0.8
Scoliosis	0.8
Impacted cerumen (wax in the ears).....	0.7
Undescended testes	0.7
Blepharitis (inflammation of the edges of the eyelids).....	0.4
Abnormal blood pressure.....	0.3
Otitis media (infection of middle ear).....	0.3
Toe deformities	0.2
Diseased gums	0.2
Functional heart murmur.....	0.2
Enuresis	0.1
Asthma	0.1
Enlarged thyroid	0.1
Enlarged septum	0.1
Questionable tuberculosis	0.1
Chorea	0.1
Other defects	2.8

The School Health Act of the state of Pennsylvania which became effective in the fall of 1945 makes it obligatory for all pupils in public, private, and parochial schools to have a complete physical examination every other year.

15

Sickness Records and School Attendance

H. T. Taylor, supervisor of physical education in the public schools of Louisville, Kentucky, in 1942, reported on a study of sickness records of ap-

proximately 7,000 white pupils for the period from September 1938 to June 1939. An average of 538 pupils were observed in each grade from kindergarten through the twelfth.

Some ten sicknesses caused approximately 86 percent of all absences due to sickness, and sickness was responsible for about 80 percent of all school absences. Colds alone caused 45 percent of all absences, and colds plus respiratory diseases caused over 60 percent of all absences.

The winter months had the largest number of absences and number of days lost, but March was the month in which the peak of sickness was reached in the Louisville public schools. The number and percentage of pupils absent due to the ten most common illnesses were as follows:

Sickness	Number	Percentage
Colds	8,917	45.98
"Sick"	2,173	11.14
Sore throat	1,564	8.06
Upset stomach	1,348	6.94
Influenza	998	5.15
Teeth	465	2.40
Headache	404	2.08
Ears	315	1.65
Dysmenorrhea	272	1.40
Tonsillitis	267	1.39
Others	2,680	13.81
Total	19,403	100.00

16

Goiter in Michigan School Children

The Michigan Department of Health reports that for many years it had been known that goiter was unusually common in Michigan. Greater attention was focused on this problem after the selective service examinations in 1918 showed that a high percentage of Michigan men had enlarged thyroid glands.

In 1923 the Michigan Department of Health and the Michigan State Medical Society joined forces to discover how much goiter there was in school children in the state and to determine whether there was a relationship between the amount of goiter in an area and the available food iodine as indicated by the presence of this chemical in water supplies.

Samples of water from all parts of Michigan were analyzed in the laboratories of the Michigan Department of Health. On the basis of these tests, four counties were chosen for further study. They were considered repre-

sentative of the state as a whole and showed the greatest range in iodine content of their ground waters.

The school children in these four counties were examined for goiter by doctors from the Michigan Department of Health. In all, 31,612 boys and girls in both rural and city schools from the first grade through high school were examined by specially trained physicians. It was found that 47.2 percent, or nearly one half of these typical boys and girls, had goiter.

The percentage of children with enlarged thyroids in each county showed a direct relationship to the iodine of that county's ground waters. Macomb County with the highest iodine content in its waters had the lowest percentage of goiter, although 26 percent of the children had the disease.

As a result of this study, goiter prevention became Michigan's foremost public health problem at that time.

Iodized salt was agreed upon as the simplest, cheapest, and most effective method of correcting the state-wide iodine deficiency. The salt manufacturers were immediately enlisted in the program and proved interested and capable allies. They produced an iodized salt that met the strict requirements of the iodized salt committee of the State Medical Society. The new salt was placed on sale in grocery stores throughout Michigan in May of 1924.

A tremendous program of education was embarked upon to inform parents of the need for using iodized salt. The State Department of Public Instruction sent into the homes via school children more than half a million letters and folders explaining the situation and announcing the new salt, as well as urging its use.

At no time has Michigan had a law requiring that salt sold on the market be iodized. The choice has been left entirely to the buyer.

Goiter surveys were repeated in 1928 and 1936 to determine whether or not progress was being made in the control of this disease. Steadily decreasing percentages of thyroid enlargement were revealed, and no ill effects from the use of iodized salt were confirmed.

In 1951 a resurvey of the four counties first studied in 1924 was decided upon by the Michigan State Medical Society and the Nutrition Advisory Committee to the State Health Commissioner.

It was found in this resurvey that nearly 82 percent of the table salt being consumed was still of the iodized variety.

School children in the four counties were examined for thyroid enlargement in April and May of 1951 by physicians from the Michigan Department of Health. Of the total of 53,785 boys and girls examined, only 1.4 percent had goiter, in dramatic contrast to the 47.2 percent in 1923.

This virtual elimination of endemic goiter in a little less than thirty years is one of the striking achievements in Michigan's long history of public health progress.

17

Changing Health Status of New York Pupils

C. H. Maxwell, M.D., and W. P. Brown, M.D., of the New York State Education Department, made a comparison in 1948 of defects found in New York school children in two investigations 20 years apart. The findings were as follows:

1. The incidence of total defects in 615,429 children examined in 1925-26 compared with the incidence of total defects in 689,606 children examined in 1945-46 showed a decrease from 905 to 818 defects per 1,000 children examined. The percentage of defects brought under professional care increased from 47 to 64 percent.
2. The over-all death rate in the age group five to nineteen years in 1945 was about one third what it was twenty years previously.
3. Dental defects constituted about half of the total defects reported.
4. As children became older there were fewer defects found on examination.
5. Defects showing a decreasing incidence in the older child were those involving the teeth, tonsils, speech, and ears (defects other than hearing).
6. Defects found more frequently in the older child involved vision, nutrition, heart, hernia, and orthopedic disorders, including defects of feet and posture.
8. In general, the older the child the higher the percentage of defects brought under professional care.

18

Student Illness in California Schools

The California Department of Public Health revealed in 1947 that a survey, conducted by the Department of Public Health, of student illness in six selected areas of California during the 1945-46 school year showed that only 18 percent of all school absences due to illness were caused by reportable diseases.

A total of 159,826 children were reported to be absent 393,758 days during the school year.

In this study, 49.9 percent of all absences were attributed to respiratory infections of a nonreportable nature. Only 18 percent of all absences were due to reportable diseases, while gastrointestinal infection accounted for 7.4 percent of the total.

These figures emphasize the fact that present state laws which provide for emergency attendance funds for schools only in cases of "epidemic of unusual duration and prevalence" are wholly inadequate. Such a law completely overlooks the more common illnesses which cause children to be absent from school. This situation has led to a false emphasis on "perfect

attendance" in school systems, despite the fact that the health of the child is often endangered by inadequate rest and care during periods of illness.

19 *Problem Children from the Teacher Viewpoint*

Joseph E. Morsh and E. Mavis Plenderleigh reported in 1949 from a study they had conducted with a group of 838 teachers that the attitudes of the latter toward child behavior are markedly different from those of many psychiatrists.

The mental hygienist places major emphasis on lack of social adjustment, unhappiness, depression, suspicion, and fearfulness whereas the teacher gives top ranking to stealing, heterosexual activity, cheating, and lying, among other problems. The 20 types of childhood behavior considered most serious by the 838 teachers are given below in the rank order of greatest to least significance:

- | | |
|-----------------------------------|--|
| 1. Stealing | 11. Disobedience |
| 2. Heterosexual activity | 12. Truancy |
| 3. Cruelty, bullying | 13. Selfishness, lack of sportsmanship |
| 4. Lying | 14. Resentfulness |
| 5. Impertinence, defiance | 15. Masturbation |
| 6. Destruction of school property | 16. Lack of social adjustment |
| 7. Obscene notes or obscene talk | 17. Quarrelsome attitude |
| 8. Unreliability | 18. Impudence, rudeness |
| 9. Cheating | 19. Lack of interest in work |
| 10. Unhappiness, depression | 20. Laziness |

It was concluded from this study that the average teacher exhibits a tendency to place too much emphasis on problems dealing with violations of standards, integrity, morals, and transgressions against regulations and authority. The teachers exhibited a preference for submissive and compliant behavior on the part of the pupil rather than for aggressive, independent action, although elementary school teachers were found to be slightly more tolerant of problem behavior than high school teachers.

The woman teacher was found to be more severe than the male teacher in the rating of children's behavior.

20 *Menstrual Problems of College Women*

Nora Winther, M.D., of Minneapolis, Minnesota, says that from 1935 to 1945 there were 5,210 women students at the University of Minnesota who came to the Student Health Service because of menstrual difficulties.

Pain, discharge, and irregular bleeding were the three chief complaints. Of the total group, 32 percent sought medical advice because of irregular bleeding.

21 *Fatigue as a Major Health Problem Among College Women*

Eleanor Metheny, of the University of Southern California, reported in 1946 from a study of 300 college women that chronic fatigue was considered by them to be their leading health problem.

Indicated below are the twenty major health problems with which these students were confronted, according to their own conceptions.

1. Chronic fatigue	37	11. Feet	9
2. Frequent colds	32	12. Teeth	9
3. Skin	20	13. Constipation	8
4. Dysmenorrhea	19	14. Allergies	8
5. Eyes	17	15. Underweight	7
6. Body mechanics	16	16. Cardiac	5
7. Overweight	14	17. Tonsils	3
8. Mental-nervous	10	18. Headaches	2
9. Anemia	10	19. Ears	2
10. Endocrine	9	20. Asthma	1

22 *Blood Pressure of 75,258 University Students*

Drs. Boynton and Todd, of Minneapolis, stated in 1947 that many studies of blood pressure have been on large numbers of persons of different ages representing supposedly normal, healthy people.

They also indicated findings from the records of physical examinations made at the Student Health Service at the University of Minnesota from 1930 through 1942. There were 43,800 men and 31,458 women in the group, most of whom were under twenty-six years of age.

The average systolic blood pressure for men of all ages was 122 mm., and for women, 111 mm.

The average systolic blood pressure of women showed a tendency to rise with age. This trend was not seen in men.

The average diastolic pressure of men was 74.5 mm. and of women, 69.7 mm.

In both men and women there was a tendency for the diastolic pressure to increase with age.

23 *Tuberculosis Among College Students*

Thomas J. Brooks, Jr., Ph.D., M.D., professor of preventive medicine and public health at the University of Mississippi School of Medicine, reports a four-year case finding and follow-up study on tuberculosis among college students at Florida State University.

During the period of the study at Florida State University seven active,

previously undiagnosed cases of tuberculosis were identified and twelve previously diagnosed cases were studied at the university.

All seven of the new cases were withdrawn from school at the time of diagnosis and referred to sanatoriums for treatment. Of the twelve students with arrested tuberculosis, three did not return to the university for reasons not related to their pulmonary disease. One of these students is known to have developed active tuberculosis in the armed forces. Only one of the nine remaining in this category had been able to graduate without having to withdraw at least once because of recurrent activity. One student has remained continuously in school but has not yet graduated. Thus, all seven patients with previously undiagnosed tuberculosis and seven of twelve patients with old tuberculous infections evidenced activity at the time of diagnosis or before completing their college education.

Dr. Brooks points out that the inference that all persons with arrested tuberculosis should be denied admission is not justified and should not be drawn from the small number of cases reported here. The indication is, rather, that an energetic case finding and follow-up program is essential.

24

Health Problems of 1,000 College Men

Bruce L. Bennett, of Ohio State University, reports a study in which he used the Mooney Problem Check List, College Form, to ascertain health problems of 1,000 men students at Ohio State University in 1952.

The Mooney Problem Check List consists of 330 problems equally divided into 11 areas, with Health and Physical Development as one of the areas. Students are instructed to read the problems and underline those that suggest troubles and worries. Then they are asked to go back over the ones that have been underlined and circle the number of those items which are of most concern. There are also summarizing questions which afford the student an opportunity to describe his chief problems in more detail. The last question asks if the student would like to talk his problems over with a staff member.

The leading health problems of the 1,000 college men of this study are summarized in the accompanying table:

Rank	Problem	Number Underlined	Number Circled	Total
1.	Not enough sleep.....	173	48	221
2.	Being underweight	105	28	133
3.	Not enough exercise.....	90	14	104
4.	Weak eyes	78	23	101
5.	Nose and sinus trouble.....	79	21	100
6.	Tiring very easily.....	67	16	83
7.	Not enough outdoor air and sunshine.....	69	10	79

Rank	Problem	Number Underlined	Number Circled	Total
8.	Poor teeth	61	10	71
9.	Poor complexion	43	18	61
10.	Frequent colds	51	8	59
11.	Being overweight	41	16	57
12.	Not very attractive physically.....	45	12	57
13.	Too short.....	43	9	52
14.	Poor posture	44	8	52
15.	Not as robust as I should be	45	5	50
16.	Frequent headaches	35	8	43
17.	Speech handicap (stammering, etc.).....	21	13	34
18.	Not getting proper diet.....	25	7	32
19.	Being clumsy and awkward.....	23	5	28
20.	Tired feet	18	8	26
21.	Digestive troubles	16	6	22
22.	Physical handicap.....	13	6	19
23.	Lack of appetite	11	5	16
24.	Poor hearing	8	7	15
25.	Frequent sore throat	12	3	15
26.	Frequent illness	6	5	11
27.	Afraid I may need an operation.....	4	5	9
28.	Too tall	6	2	8
29.	Threatened with a serious ailment.....	4	3	7

Chapter III

Health Instruction

It was reported that by 1950 approximately 75 percent of the states required by statute that health instruction be provided in the elementary and secondary schools. Specific requirements of the law varied considerably in the different states. Several national organizations and conference groups have recommended that at least one full semester of daily health instruction should be provided on both the junior and senior high school levels. Recommendations called for two full semesters of daily instruction when safety is added to the health instruction program.

The Oregon health instruction law which became effective on July 1, 1945, made mandatory that the curriculum of the elementary and high schools of the state should include instruction in the following areas: personal hygiene, community health and sanitation, communicable diseases, nutrition, mental health, safety education, first aid, choice and use of health services and health products, physiology of exercise, structure and functions of the human body, and effects of alcoholic drinks, stimulants, and narcotics.

Various surveys of health instruction over a period of ten years have revealed that considerable progress is needed in the quality of health education. In general, teachers appear to be inadequately trained in the field of health, and instructional materials need improvement.

Important studies of pupil health interests have been made within recent years. The various ways in which the health interests and needs of students may be discovered have been elaborated upon. An analysis of the health interests of 10,000 secondary school students from 26 high schools in ten different states has shown that interest in this field is widespread. Those persons responsible for leadership in the field of curriculum construction can gain much helpful guidance from such studies.

Health instruction at the college level has received an increasing amount of attention. Studies have been made of the health needs and interests of college men and women and other studies have been made relative to the teaching of hygiene. Questionnaire studies show that most of the health teaching at the college level is being done by physical educators.

There is a definite trend toward the development of the school health curriculum on a broad basis of legal requirements, pupil health interests and needs, and community problems. The interest of parents and other community groups in the determination of a satisfactory health curriculum is increasing. Greater participation by teachers and pupils, especially at the elementary school level, is also characteristic of an expanded interest in health education.

There has been somewhat of a trend toward a separate health course at the high school level, with three to five hours per week being devoted to this subject for one or two semesters in both the junior and senior high schools. The use of a health textbook has been advocated as permitting greater student participation outside of class and providing a more orderly health course.

A Committee on Health Content of Textbooks reported in 1953 that reviews of 52 books in health, general science, and biology showed all to contain a large number of errors in respect to health facts. Nutrition, first aid, and communicable diseases were the major areas in which incorrect statements were made in the various textbooks.

In New York State, the Christian Science Church has stated that it does not desire exemptions from health classes for pupils of Christian Science families. On the other hand, this church did request exemption from the compulsory study of health and hygiene which stresses disease and the medical treatment of disease.

Cancer education at the high school and adult school levels has been increasing within recent years. Since 1951 some public adult schools in the United States have included courses on cancer in the curriculum. Such courses first began to appear in Newark, New Jersey, Des Moines, Iowa, and San Diego, California.

It has been stated that schools can and should play their part in providing proper sex education for young people, but that a number of pitfalls should be avoided. Some states, such as Oregon and Wisconsin, have been outstanding in their experience with family life education.

25

Trends in Health Instruction

H. F. Kilander, Ph.D., pointed out in 1949 that health cannot be attained through the efforts of medicine and public health alone. It is recognized that medicine and public health do things for people, whereas the task of health education is to guide people to do for themselves what is good for their own health and that of others in this and future generations.

The recommendations of several national organizations and conferences have been that there be at least one full semester (preferably two) of daily health instruction, including safety, on both the junior and senior high school levels. A less satisfactory plan is that of two or three hours of instruction weekly for one full year on each level.

Where health instruction is in a special course, separate credit is usually given. A number of high schools are including this credit in the conventional sixteen units required for graduation.

Although there is a growing awareness of a need for more health instruction in the schools, and although a number of colleges are preparing teachers for this purpose, the young graduates in health education frequently find it

difficult to obtain positions in their major field. Often they have to fall back on their minor fields for employment, hoping eventually to secure a teaching position which includes at least some health teaching. On the other hand, there is considerable demand for experienced persons in school health education, especially those with graduate degrees in this field.

26

Statute Laws on Health Instruction

H. Kent Farley, of the Oregon College of Education, reported in 1950 that 75 percent of the states require by statute that health instruction be provided in the elementary and secondary schools.

Approximately 34 percent of the states indicate by statute that such health instruction must be provided by means of a course of study. The primary responsibility for this curriculum development appears to lie with the state board of education or the chief state educational officer.

Farley reported that better than 63 percent of the states require by statute that instruction in the effects of alcohol, stimulants, and narcotics be provided. Safety instruction is required by statute in approximately 28 percent of the states. Less than 8 percent of the states require by statute that instruction in sanitation be provided, and only 6 percent that nutrition be taught. The teaching of communicable disease is required in 4 percent of the states. Only one state has a statutory requirement that instruction in the effects of tobacco be provided.

Instruction in tuberculosis, home nursing, dental health, first aid, disease prevention, selection and use of health services and health products, mental hygiene, and community hygiene are among health problems specifically mentioned by statute in one state each.

27

Oregon's Health Instruction Law

H. S. Hoyman, formerly of the University of Oregon, reported in 1945 that the Oregon health instruction law which became effective on July 1, 1945, provides for a combined health instruction and physical education program in all elementary and high schools in Oregon, "to promote, develop, and maintain among pupils at all age levels optimum physical growth, health, and physical fitness." This article deals only with the health instruction features of the law.

The law is mandatory rather than permissive. Any pupil, however, may object to the requirements of the act on constitutional grounds.

Health curricula in all elementary and high schools of the state must be planned to include instruction in the following areas: (1) personal hygiene, (2) community health and sanitation, (3) communicable diseases, (4) nutrition, (5) mental health, (6) safety education, (7) first aid, (8) choice and use

of health services and health products, (9) physiology of exercise, (10) structure and functions of the human body, and (11) effects of alcoholic drinks, stimulants, and narcotics.

Under this law it is the duty of the state superintendent of public instruction to see that the boards of directors of all school districts provide a program of health instruction in their respective schools, and that city and county superintendents carry out any rules and regulations prescribed by him for the implementation of the law.

No required time allotment for health instruction is specified in the law. Therefore, a given school cannot meet the requirements of the act merely by providing health instruction on a quantitative time basis. The act was drawn to necessitate the development of health curricula that would be rated periodically on the basis of suitable standards. The qualitative appraisal will follow two main paths: (1) the evaluation of pupil achievement in terms of health knowledge, practices, attitudes, skills, and health status; (2) rating the school health instruction program, grades 1 to 12 inclusive, in terms of objectives, scope, sequence, materials, methods, evaluation procedures, personnel, and facilities.

The law also provides that the state assist the local community in developing its health curriculum.

28

Health Instruction in Boston

George D. Strayer, director of a survey of the program in health, physical education, and recreation in the Boston schools, reported in 1945 that there were many fine features in the program but deplored the type of health instruction that had been carried on.

Dr. Strayer stated that the deplorable state of health instruction in the Boston public schools at that time was the inevitable result of years of neglect in the past and an urge to do something about it in a hurry. The teachers were not trained in this subject, or only partly trained, or in some cases badly trained; textbooks and other vital teaching aids were lacking, and there was no adequate curriculum.

Misstatements in health instruction in the schools of Boston indicated the poor teaching that was going on. Children were learning from the following type of instructors:

1. Teacher totally unprepared for the class. Teacher stated to the class, "trichiknosis [an attempt to spell the word as the teacher pronounced it] is a form of diarrhea."
2. Teacher, scheduled to teach a health class, was sitting at the desk eighteen minutes before the period ended and the class was working algebra problems.

3. Teacher stated, "Iron helps the white corpuscles to fight the red corpuscles."

4. Teacher stated, "Calcium gives body to the cells; it thickens the cells like starch does linen."

5. Teacher stated, "Egg yolk is better than medicine for anemia."

Dr. Strayer found it difficult to understand the policy that started health instruction in the schools and made no provision for textbooks for the pupils. With all the resources of the printed word available with excellent illustrations in modern textbooks, the teachers of health in Boston were forced to use an antiquated and outmoded method of dictation because text material was not available at the time of the survey.

29

Health Teachers in Minnesota

Edward J. Dvorak of the Minnesota Department of Health reports from a questionnaire study of 360 health teachers in Minnesota schools that in general they are not well qualified for their responsibilities.

It was found that fifty-five different teacher-training institutions had a part in the training of Minnesota health educators. A total of 297, or 83 percent, of the Minnesota health teachers had majors or minors in physical education.

Although over half of the schools in Minnesota have two or more hours of health instruction a week, health teachers in general were spending a major portion of their time teaching in other areas. Only three health teachers had substantially a full-time health teaching load at the time of this study and only 8 percent of the health teachers were spending more than 50 percent of their total time teaching direct health classes.

Mr. Dvorak concludes that there is a need in Minnesota for more intensive in-service training programs for health teachers now on the job and that teacher training institutions, the State Department of Education, and the State Department of Health, as well as other agencies, should accept the challenge for improving the qualifications of health teachers.

30

Health Instruction in California Secondary Schools

Blanche Jessen Drury, of San Francisco State College, reports from a study of 591 high schools in California that health does not occupy a prominent position in the curriculum of California secondary schools.

Miss Drury reports that health instruction is poorly organized and that there is great variation as to placement of health instruction in the total school curriculum.

In most of the schools the extent of health education is such that there is

little more than compliance with the required instruction in first aid, driver education, and safety education.

Although the services of health specialists are available, especially to schools located in cities, these services are not utilized to the fullest extent. School administrators are frequently uninterested and even antagonistic toward health instruction, according to Miss Drury.

Teachers of health courses in general feel that they are inadequately prepared. The supervision of health instruction is frequently performed by persons inadequately trained in this field. The school shuns controversial health issues instead of assuming a position of leadership in the instruction of both students and the community.

31

Pupil Interests and Health Instruction

Arthur J. Lewis, Jr., cited in 1947 a valuable study made in the Denver Public Schools on the health interests of 3,600 pupils from grades four through twelve.

Pupil reactions were secured to 250 activities which were listed by a committee of teachers as having some value for health. These reactions were then classified by grade levels.

On all grade levels there was a very low degree of interest in the drawing of a diagram to show the structure of a tooth; girls had little interest in learning how to build muscles, but boys in all the grades studied were almost 100 percent interested in this problem. After the seventh grade both boys and girls showed a rapid rise in their desire to have discussions of personality problems and more than 80 percent of the pupils on all grade levels were interested in finding out why some people did or did not like them. In the seventh grade there was also a marked increase of interest in learning how to select a husband or wife.

The study emphasized the value of the functional approach in health education and should be studied in full by all health instructors.

32

Discovering Needs and Interests for Health Instruction

Jessie Helen Haag says the teacher must realize that the effectiveness of health instruction depends upon satisfying the student's health needs and interests. In order to determine these, the teacher must be familiar with objective devices that give information on the health status, knowledge, attitudes, and practices of the students.

The following resources can be used by the teacher in determining the health status of the student: (1) the health record card, (2) the dental record, (3) results of tuberculin and X-ray testing programs, (4) results of vision testing, (5) results of hearing testing, (6) results of physical education tests,

(7) results of postural diagnostic tests, (8) results of nutritional screening, and (9) systematic observation by the teacher.

In order to find the status of the health knowledge of the student, the teacher can use the survey, rating scale, check list, and questionnaire. Teacher-made objective written tests, supplemented with standard health knowledge tests, can help to give the teacher the information desired.

Health counseling, a self-appraisal list, and the "suggestion box," as well as panel discussions, debates, and open discussions, can help to reveal student health attitudes.

Systematic observation by the teacher of the student under varying conditions in the school can give pertinent facts about his health practices. Demonstrations by the students of first-aid skills, home nursing techniques, and so on, will also give valuable information on this subject. Student-conducted surveys can also be most helpful. Standardized, health practice measuring devices are also available.

33 *An Analysis of the Health Interests of 3,000 Secondary School Students in California*

Joseph E. Lantagne, Ed.D., of the University of California at Santa Barbara, observed in 1950 that for many years the discovery of pupil interests has been considered of primary importance in developing the school curriculum. This study concerned itself with the determination of the health interest of 3,000 secondary school students as a partial basis for curriculum construction.

A health interest inventory was used in eight secondary schools in California as a means of determining health interests of students at this academic level.

The fifty leading health interests of these 3,000 pupils are indicated in the following list:

Health Problem	Percentage of Students Interested
1. Juvenile delinquency	66
2. Sex instruction	65
3. Causes of suicide	56
4. Cancer	54
5. Tobacco and human health	53
6. Preparation for marriage	52
7. Lifelong care of the eyes	50
8. Safest age to have a baby	50
9. Hit-and-run drivers	50
10. How to report accidents	50
11. Sunburn	50
12. How to have good posture	50

Health Problem	Percentage of Students Interested
13. Causes of mental illness.....	50
14. Problems of tooth decay.....	50
15. Problems of alcohol	48
16. Schools and juvenile delinquency.....	47
17. Dangers of sleeping pills.....	47
18. Speed and accidents.....	46
19. Atomic warfare	46
20. Conquest of disease.....	46
21. War and disease.....	45
22. Sweets and dental decay	45
23. Drunken driving	45
24. Effects of tea and coffee.....	44
25. How to use a gun properly.....	44
26. Pregnancy and health.....	43
27. Poison oak	42
28. Child labor	42
29. Mental health and marriage.....	42
30. Dangers of a high I.Q.....	42
31. Is cancer inherited?.....	42
32. Sports versus apparatus activity.....	41
33. Common sicknesses	41
34. Earthquakes	41
35. Births in hospitals or homes.....	40
36. The ability to have children.....	39
37. Tuberculosis and pregnancy	39
38. Breast or bottle feeding?	39
39. Protecting pedestrians	38
40. Causes of infant death	38
41. Candy and dental health	37
42. Can drug addicts be cured?	37
43. Deaths of mothers in childbirth	37
44. Parking and traffic accidents	37
45. Relaxation (resting)	37
46. Communicable diseases	37
47. Psychological basis of crime	37
48. Tuberculosis	37
49. Social diseases	37
50. Food during pregnancy	36

34 *Health Interests of 10,000 Secondary School Students*

Joseph E. Lantagne, of the University of California at Santa Barbara, reported in 1952 a study of the health interests of 10,000 students from twenty-six high schools in ten different states.

For purposes of this study a check list or health inventory of three hundred health problems was used.

The fifty leading health interests of 5,215 secondary school boys and of 4,785 secondary school girls are indicated in the accompanying two tables.

THE 50 LEADING HEALTH INTERESTS OF 5,215
SECONDARY SCHOOL BOYS

Order	Percent Interested
1. Sex instruction	65
2. Safety in water	64
3. Tobacco and human health	61
4. How to use a gun properly	60
5. Sports vs. apparatus activity	58
6. Atomic warfare	58
7. Juvenile delinquency	58
8. Speed and accidents	56
9. Cancer	56
10. Causes of suicide	55
11. Problems of tooth decay	54
12. How to report accidents	51
13. Hit-and-run drivers	51
14. Drunken driving	50
15. Lifelong care of the eyes	50
16. Problems of alcohol	48
17. War and disease	47
18. Causes of mental illness	47
19. Danger of the high I.Q.	43
20. Is cancer inherited?	43
21. Atomic radiation	43
22. Is there an "athletic heart"?	43
23. Effects of tea and coffee	42
24. Safest age to have a baby	42
25. Child labor	42
26. "Athlete's foot"	42
27. Danger of sleeping pills	42
28. Sweets and dental decay	41
29. Ways of getting to sleep	41
30. Conquest of disease	41
31. Traffic accidents and laws	40
32. Sunburn	40
33. Communicable diseases	40
34. Preparation for marriage	40
35. How to have good posture	40
36. Relaxation (resting)	39
37. Schools and juvenile delinquency	39

Order	Percent Interested
38. Traffic accidents, national	39
39. Best number of working hours	38
40. The problem of physical unfitness	38
41. Uses and abuses of narcotics	38
42. Jealousy	38
43. Health hazards with foods	37
44. Can drug addicts be cured?	37
45. The school lunch	37
46. Mosquito control	37
47. Treasury Department and narcotics	37
48. Earthquakes	36
49. Common sicknesses	36
50. Bicycle safety	36

THE 50 LEADING HEALTH INTERESTS OF 4,785
SECONDARY SCHOOL GIRLS

Order	Percent Interested
1. Sex instruction	70
2. Juvenile delinquency	67
3. Cancer	64
4. Causes of suicides	64
5. Preparation for marriage	64
6. Safest age to have a baby	64
7. Causes of mental illness	64
8. Jealousy	60
9. Sunburn	58
10. Pregnancy and health	57
11. Deaths of mothers in childbirth	57
12. Problems of tooth decay	57
13. Lifelong care of the eyes	56
14. Communicable diseases	55
15. The ability to have children	54
16. Is cancer inherited?	54
17. Tobacco and human health	54
18. How to report accidents	51
19. Dangers of sleeping pills	51
20. Births in hospitals or at home	51
21. Safety in water	50
22. How to have good posture	50
23. Mental health and marriage	50
24. Schools and juvenile delinquency	49
25. Problems of alcohol	49
26. Hit-and-run drivers	49

Order	Percent Interested
27. Food during pregnancy	49
28. Child labor	49
29. Common sicknesses	48
30. Menstrual problems	48
31. Effects of tea and coffee	48
32. Breast or bottle feeding	48
33. Causes of infant deaths	47
34. Drunken driving	47
35. Sweets and dental decay	47
36. Exercise and menstruation	47
37. Speed and accidents	46
38. Ways of getting to sleep	45
39. Infant and maternal deaths	45
40. Military drills vs. physical education	45
41. War and disease	44
42. Early rising after childbirth	43
43. Nutrition and overweight	43
44. Poliomyelitis (infantile paralysis)	43
45. Housing and health	43
46. How to use a gun properly	43
47. Dangers of the high I.Q.	42
48. Home accidents	42
49. Tuberculosis and pregnancy	41
50. Causes of speech disorders	41

35

Health Problems of Interest to College Men

James H. Humphrey, of Michigan State College, reported in 1952 a study of the health problems of most interest to a group of sixty sophomore men enrolled in a personal and community hygiene course.

The students were asked to write down three of the problems which they felt they would like most to discuss in this particular course. Twenty classifications of various health problems of interest emerged from this effort. This material was then developed into a check list and submitted to the entire class as a means of further determining their health interest.

The topics preferred for discussion and the percentage of students desiring instruction on them is indicated in the accompanying table:

Rank	Topic	Percent*
1.	Sex education	52
2.	Communicable diseases	47
3.	Nutrition and foods	38
4.	Care of sense organs	20

* Rounded to the nearest whole number.

Rank	Topic	Percent*
5.	Home hygiene	17
6.	Exercise, sleep, and rest	15
7.	Heart disease	12
8.	Treatment of injuries	12
9.	Sanitation	12
10.	Mental hygiene	12
11.	Responsibility in community hygiene.....	10
12.	Posture	8
13.	Skin disease	8
14.	Cancer	7
15.	Care of hair	7
16.	Elimination	7
17.	Narcotics and stimulants	7
18.	Physical and mental examinations	7
19.	Clothing	2
20.	Socialized medicine	2

36

Health Instruction in State Universities

R. T. DeWitt, of Georgia Teachers College, observed in 1946 from a questionnaire study that in a majority of the state universities, health classes are taught by physical educators.

Forty-two schools responded to the questionnaire which covered various aspects of the health program in the colleges studied.

The importance of the physical educator in the health education program is indicated in the table below which summarizes the type of teaching personnel engaged in health instruction in thirty-two of the state institutions.

Personnel Teaching Health	Number of Colleges
Physical educators only	15
Both physical educators and physicians.....	8
Physical educators and zoology teachers.....	2
Physical educators and nurses	1
Department of Public Health	1
Other departments or teachers	5

37

Improving the School Health Program

Foster Keagle reported in 1953 that a novel method for improvement of the secondary school health program has been developed as a part of the Illinois school curriculum program.

The plan involved the participation of parents, laymen (adults of the community having no children in school), teachers, and students. These partici-

pants, composing an original committee of thirty to forty members, were asked to present their opinions about what the schools should be doing in any area, including health education.

A jury of outstanding school health and educational leaders in the state of Illinois, representing school administrators, physicians, nurses, health educators, and health teachers, sat for two full days in deliberation concerning the aims and principles involved in a good school health program. After discussion the group evolved forty-three principles or objectives for a school health program.

After the principles had been agreed upon, a study in the school itself originated with a leader and a committee composed of laymen, parents, teachers, and students. These members were given an inventory entitled "What do you think about our school health education program?" which contained a list of the forty-three principles evolved by the jury of the preceding paragraph.

Committee members then filled out the unsigned inventory and a tabulation of results offered an excellent starting point for a series of discussions on what the school was doing in the school health program.

38

Health Education in Los Angeles

Aldine Fulenwider, consultant in health education for the Los Angeles City Schools, reported in 1952 that for the previous two and a half years members of fourteen community agencies in Los Angeles had been serving a number of teacher groups as resource people in the development of an elementary health education teaching guide.

The teachers and the resource personnel set up their objectives in each specific area of health education, such as safety, nutrition, body mechanics, mental health, and family life education. The members of the group came to an agreement upon what they wanted and needed to accomplish. The problem then was to find the most effective way of achieving the objectives agreed upon. Here the responsibility fell largely upon the teachers.

In the area of safety education teachers began their studies by examining reports of major school accidents. From these data it was soon discovered that telling, warning, preaching, and scolding must be implemented by other learning experiences, for verbal warnings were not the complete answer to accident prevention. The teachers came to realize that when teachers were made aware of problems and had an opportunity to do their own thinking in solving them results would be more promising. The problem solving approach used in the teacher's guide is the natural outcome of this finding and philosophy.

Some of the ways in which the students now participate in health education activities are in planning and preparing good packed lunches, planning a good lunch by the school cafeteria, appraisal as a group of their own box

lunches, selecting a balanced lunch from cardboard food models for discussion afterwards, and in general participating in learning experiences in such a way that the students have opportunities to pass judgments, exercise decisions, and do something about their own thinking.

39

The Concentrated Health Course

Holger F. Kilander, of the National Tuberculosis Association, noted in 1947 that separate courses have been taught in health education for a number of years in many secondary schools. More recently the trend has been toward consolidating the subject in three to five hours per week for one or two semesters in both the junior and senior high school.

New York State now requires each high school to offer health courses for five periods per week for two semesters. Florida had under consideration at the time of this report a plan which called for the concentration of instruction in two terms each on the junior and the senior high school levels.

The Pennsylvania Branch of the National Association of Secondary School Principals made a recommendation in 1945 that the required time allotment in health education be changed from one hour a week throughout the six years of secondary school to (a) five periods a week for one semester each in the junior and senior high school, or (b) three hours a week for one year in junior high school and three hours a week for one year in senior high school.

Dr. Kilander believes that for effective integration a focal point is needed, that is, a special course in health education, taught by a special teacher in that subject field. The contribution of other subjects to health education should be in addition to, rather than in place of, the solid health course. And, what is more important, there is under this plan an individual who is primarily responsible for the health education program.

To teach a course with as much scientific content as health education one hour a week is pedagogically unsound.

Many educators say that the consolidation of a year's course of one hour a week into two hours for one term is much more productive of results. Similarly, a preference is frequently expressed for teaching five times a week for one semester rather than three hours a week for a whole year since approximately the same amount of work is accomplished.

The more factual the content of a course, the more desirable it is that a textbook be used. The use of a textbook saves time, permits greater student participation outside of class in the preparation of lessons, and lends itself to an orderly, sequential course. Also, in a concentrated course, a textbook is more likely to be adopted, and is more likely to be put to better use. Today there are many excellent textbooks available for such a health course.

Such solid health courses should be viewed as being comparable in value to other science subjects of equal credit.

Accuracy of Health Textbooks

The Committee on Health Content of Textbooks reported in 1953 on reviews of 52 books in health, general science, and biology in respect to the number of errors contained in the textbooks.

It was found that high school textbooks in the field of health averaged 43 errors per book with a range from 21 to 126 errors. Elementary school textbooks averaged 8 errors per book.

In terms of errors per 100 pages the health books averaged 13 mistakes and the general science textbooks averaged 20 errors per 100 pages. Only three biology books were reviewed but these averaged 22 errors per book.

Nutrition, first aid, and communicable diseases were the major areas in which incorrect statements were made in the various textbooks.

The committee concluded that due to the scientific advances and changes in the field of health a large number of textbooks tend to become outmoded, inaccurate, and obsolete within a relatively short period of time.

In making the study of errors regarding health matters contained in health, general science, and biology textbooks, the committee used the services of 146 different individuals who made 217 reviews of the 52 books involved.

41 *Christian Science and Health Education in New York*

On April 8, 1952, Governor Thomas E. Dewey of New York approved a bill to reduce the number of classes on health and hygiene from which public school pupils of the Christian Science faith may be excused on the ground of conflict with their religious beliefs.

Under the new law, pupils of Christian Science families will not be excused from classes dealing with the germ theory of disease, prevention and control of communicable disease, and general public health.

The Christian Science Church has stated that it does not desire such exemptions. On the other hand, the pupils will be exempted from the "compulsory study of health and hygiene which stresses . . . disease and the medical treatment of disease." Christian Science members helped to draft the new bill.

42 *Cancer Education in High School—I*

Frank L. Rector, M.D., of Lansing, Michigan, said in 1952 that the concept of cancer education in high school is of recent development and that in spite of all objections, there are seven good reasons why cancer education should be a part of the high school curriculum.

1. The high school student of today is the potential cancer patient of the next generation.

2. High school students need this knowledge to help them lead more useful lives.
3. Some adolescents develop cancer, and others may have the disorder later in life. If there is no knowledge of the disease, proper medical treatment may be postponed until it is too late.
4. High school students accept cancer education as general helpful information.
5. When informed about cancer and how it should be treated, high school students often influence parents to seek proper medical care when there are signs that suggest cancer.
6. If the high school student is informed of some of the causes of cancer, he may be able to correct his living habits to prevent this hazard.
7. Protection against cancer is an individual matter. Only by knowledge of cancer can an individual provide his own protection. This is why education is the key to cancer control.

43

Cancer Education in High School—II

Charles S. Cameron, M.D., of the American Cancer Society, says there are advantages in teaching cancer facts to students of high school age.

Because such students are well removed from the age when cancer becomes a grave personal problem the information is apt to be received in a more objective way.

The high school student has a relatively fresh and uncontaminated mind as far as preconceptions and misinformation regarding cancer are concerned. This makes possible the teaching of cancer from the scientific point of view in a more effective way.

There is also the advantage that cancer information imparted to high school students may sift into the home rapidly, so that parents, relatives, and others become well informed on the subject.

Another value in presenting cancer education to students of high school age is that there is an opportunity to stimulate young minds toward careers of science and, specifically, toward research pertaining to cancer.

There is also a distinct advantage in presenting the subject of cancer as one of our great community public health problems.

44

Cancer Education in Evening Schools

Raymond C. Lewis of the American Cancer Society reported in 1954 that since 1951 some public adult schools in the United States have included cancer in the curriculum. Such courses first began to appear in Newark, New Jersey, Des Moines, Iowa, and San Diego, California. More and more of the

adult evening schools are co-operating with the American Cancer Society in providing such instruction.

Among persons enrolling for the course teachers and nurses predominated in Iowa, but the general public was well represented in both the California and New Jersey courses. In Des Moines most of the class sessions were attended by about 100 persons, whereas in Sioux City attendance ranged from 32 to 65 persons.

Objectives of the cancer education programs have been to remove superstition, misunderstanding, and fear of cancer and to teach the adult students the danger signals of cancer, the proven ways to cure and control cancer, and to acquaint the students with the organizations and agencies contributing to the control of cancer.

45

Sex Education in School

Howard S. Hoyman, Ed.D., professor of health education at the University of Illinois in 1953, states that the schools can and should play their part in providing proper sex education for young people. He states, however, that there is no well-charted road for schools to follow in developing a program of sex education.

Educators should consider not only what ought to be included, but also what should be omitted from sex education in the schools. In Oregon, for example, school people have been advised that (1) birth control methods, (2) venereal disease prophylaxis, (3) sexual techniques, and (4) sexual perversion should not be included as topics in health units for either the junior or senior high school grades.

The reasoning behind such advice is that if the school does teach such topics it is apt to be putting itself in the position of endorsing such activities by inference. Also there is no real need on the part of pupils to learn such information so far as their daily living problems are concerned.

Dr. Hoyman points out that there is no simple, economical, foolproof way of providing satisfactory sex education merely by showing students films on this subject. When properly prepared and properly used, such sex education films are valuable visual aids, but may, if improperly used, be misleading or even positively dangerous in their effect upon youth.

Experience in the United States and abroad indicates that a strictly scientific and biological approach to sex education has definite, important limitations. There is no defensible way for the school to avoid facing the moral, ethical, and religious issues involved in providing sex education for modern youth. When properly planned by the school, sex education is concerned with both facts and values. Even limited success will depend upon the school having ideals, inspiration, and conduct as a deep concern. This makes the task of the school more difficult, for it is comparatively easy to teach the "facts

of life." It is another matter to shape the attitudes of youth toward sex. In providing sex education the school, along with the home, church, and community, must accept its share of responsibility for guiding the ethical development of boys and girls.

46

Family Life Education in Wisconsin

Philip Dykstra reported in 1953 that illegitimacy in Wisconsin has decreased over 18 percent during the last 15 years while neighboring states have averaged a 2 percent increase, that Wisconsin has one of the lowest venereal disease rates in the United States, and that during recent years Wisconsin has had one of the lowest records on divorce rates in the country.

The explanation of this favorable situation appears to reside in a long-range, well-planned program of sex education, begun thirty years ago and carried on successfully up to the present time. The program has changed through the years with increasing concentration on the encouragement of local programs by schools, parent groups, and civic organizations.

Health educators in Wisconsin have developed a social hygiene program on two premises:

1. That sex education is a small but important part of education for family living and parent training.
2. That sex education is best done by the home first, with the help of the church, the school, and the rest of the community.

Objections from church and home have been vastly overemphasized. When church leaders understand the modern theories of sex education—that health educators are not advocating a separate course per se but rather integration within the established curriculum, that they are including sex as a small but important part of family life education, and that they advocate taking no stand on the problems of birth control or divorce—then the church leaders are usually most co-operative.

As for parents, they are usually the first to admit the need for help in handling this phase of their child's guidance and they welcome the aid of community agencies.

Chapter IV

School Health Services

By 1947 some 43 states had laws permitting or requiring medical examinations of children in school. Many of these laws needed to be modified or repealed, such as those which specified that no clothing, or only the shirt, could be removed from the school child during an examination.

It has been emphasized many times during the past ten years that the medical examination in the schools should be an educational experience for the child.

The American Medical Association reported in 1951 that 34 percent of the local medical societies throughout the United States have a school health committee or assign functions involved in this responsibility to other committees. The Medical Association also reports that there is a relative scarcity of school physicians with slightly less than 5 percent of rural and 7 percent of city school districts employing a full-time doctor.

It is reported that immunizations of school children are now done mostly by the family physician. Only 1 percent of school physicians and 2 percent of the public health departments did all of the immunizations in their communities in 1951, according to the American Medical Association.

A study in 1953 covering the school health service programs in 3,186 cities in the United States shows that such programs are predominantly administered by boards of education. In 60 percent of the cases it was found that the school health services programs were administered exclusively under the board of education, whereas only 11 percent were administered by the board of health. In 23 percent of the cases, however, the school health service program was administered jointly by the board of education and the board of health. Other authorities administered the program in 6 percent of the cities.

It is reported that there are approximately 8,000 physicians in the United States giving either part-time or full-time service to schools. A large proportion of these school physicians are general practitioners. Only about 4 percent are pediatricians and about 20 percent health officers.

The Committee on Professional Education of the American Public Health Association recommends that the director of school health services should be a person with special training in both education and public health, and that he should be a physician with personal qualities needed for co-operative effort.

In 1948 Pennsylvania began to provide \$500,000 per year for the payment of medical, surgical, and dental bills of its poorest school children. The local doctor or dentist, chosen by the parents, was to be paid directly by the state but no aid was to be approved except on recommendation of local school officials.

Pennsylvania also passed a law in 1947 requiring that each school district must employ school nurses in sufficient numbers to provide one school nurse for the care of every 1,500 pupils.

The National Conference on Physicians and Schools placed emphasis in 1952 on five major parts of the school health program, as follows: health appraisal of school children, emergency service for accidents and illnesses, health services in athletics and physical education, follow-up to meet child health needs, and new concepts in the control of communicable diseases.

Concepts and purposes of the school health examination have been discussed by various leaders in the field of school health.

The Astoria Plan, in which teachers and nurses confer each year on the health status of each child in the classroom, has been reported as being an effective way for rendering school medical service. An evaluation of this Plan after six years of operation in some New York schools showed that the greatest deficiency appeared to be in the recognition of emotional and mental health problems, although in general it was found that the Plan had functioned satisfactorily. Later evaluations of the Astoria Plan have led some physicians to recommend that it be supplemented by periodic routine health examinations of all pupils.

There does not appear to be any unanimity of opinion regarding the frequency with which school medical examinations should be required.

The role of the classroom teacher in the detection of health problems of school children has been shown to be an important one. One study, based upon 13,824 distinct judgments showed that the opinion of the teacher was corroborated by examining physicians in 90 percent of the cases.

In the state of Washington the suggestion that a special "health examiner" be used to conduct school health examinations met with an unfavorable reception among public health workers.

It was pointed out at a conference of representatives from medical societies, health departments, and educators in 1953 that there is more effective care for a child who is taken suddenly ill or who suffers from an accident when standard procedures and policies have been agreed upon by medical societies, health departments, and school personnel. Recommendations regarding such policies and procedures have also been made.

A study of 1,060 school children suffering from various types of illnesses shows that there is a tendency for children to remain at about the same sickness level over a period of approximately five years. It was also found in this study that the brothers and sisters of a child who had two or more attacks of illness had higher attack rates of illness over a period of three to five years, as contrasted to other children. In other words, the study indicates that the health of the school child is apt to be a problem highly concentrated in certain families and thus to concern the health of all members of the family and not of the individual child alone.

Illinois, New York, and Oregon are three examples of states that have passed important legislation regarding the school health program within the past ten years. The advancement of school health programs in these states has reflected this legal interest.

47

School Medical Services

George M. Wheatley, M.D., of New York City, indicated in 1947 that 43 states had laws permitting or requiring medical examination of children in school. Many of the laws needed to be modified or repealed, such as those which specified that no clothing (or only the shirt) could be removed from the school child during an examination; or those which called for an examination of every child every year by the school doctor; or those which specified that the examination must be done by one person such as the teacher, principal, or school nurse.

The medical examination in the school should be an educational experience for the child and the trend is for fewer but better medical examinations and conferences with child or parent, in which personal health guidance is given.

The American Public Health Association has recently emphasized the value of training and experience in education and pediatrics for the school physician.

Some school health authorities have developed consultant service for special health problems, as, for example, in the diagnosis of heart disease in children.

The school physician needs to be encouraged to participate more fully in pupil guidance. He should help teachers to continue to be health conscious and should exert his professional leadership in establishing good relationships among such community resource groups as clinics, private physicians, and the schools.

The school physician should also train the teachers for better health evaluation of their pupils in order that their responsibilities for pupil health may be met.

One of the most important responsibilities of the school physician is that of making certain of medical correction, through community facilities, of any health impairments of the pupils examined.

48

Physicians and School Health Programs

Fred V. Hein and Donald A. Dukelow reported in 1951 on the findings of a study made by the Bureau of Health Education of the American Medical Association pertaining to physician participation in school health programs.

The study was based on an analysis of 1,051 questionnaires received from local physicians.

The investigation showed that 34 percent of the local medical societies throughout the United States have a school health committee or assign functions involved in this responsibility to other committees.

It was reported that 27 percent of the communities involved in the study had school health councils, with medical representation on nine out of ten of such organizations.

The scarcity of school physicians was shown by the fact that slightly less than 5 percent of rural, and 7 percent of city school districts employed a full-time doctor.

The importance of the classroom teacher in the school health program was indicated by the discovery that 77 percent of the instructors did rough screening of the pupils in an effort to secure better health care for them. In 80 percent of the cases, the procedure involved notification of the parents, who were expected to seek the advice of a physician regarding the health problem of the pupil. The study showed that only 56 percent of the classroom teachers had received training in observation and screening of pupils for health problems, although 75 percent had been trained in first aid.

Pre-employment examinations of teachers are required in 58 percent of the communities, according to this study.

Immunizations of school children are done mostly by the family physician. Only 1 percent of school physicians and 2 percent of the public health departments did all immunizations in the communities surveyed.

The local medical societies were giving some assistance to the schools in their health instruction programs in 23 percent of the cases.

49

School Health Services in 3,186 Cities

H. F. Kilander reported in 1953 that a study of the school health service programs in 3,186 cities in the United States shows that these programs are predominantly administered by boards of education.

In most cases school health programs are financed from school funds, although administration of the school health services is ordinarily done by the group which finances it and some programs are controlled by the board of health or jointly by the board of education and the board of health.

Of 2,886 cities it was found that 60 percent administered the school health services program under the board of education. The board of health administers 11 percent of the programs, and 23 percent were found to be administered jointly by the board of education and the board of health. Other authorities administer the program in 6 percent of the cities.

School or public health nurses were employed by 85 percent of the city school systems and 63 percent employed school physicians or medical advisers.

Forty percent of the school systems used funds for dental examinations and 16 percent employed dental hygienists.

Specialized school nursing services were reported by 54 percent of the cities, whereas generalized public health nursing programs were reported by 30 percent of the cities. A combination of the two plans was reported in 8 percent, while 6 percent of the cities had no school nursing service and 2 percent had other plans.

At least one medical examination of each pupil while in school was found to be required by 83 percent of all the school systems. From eight to fourteen examinations were required by 17 percent of the schools. At least one dental examination is required by 50 percent of the schools.

About 53 percent of the school systems reported one administrative head for the school health services and the health instruction and physical education programs.

The head of the physical education department had control over the health services and health instruction more frequently than any other school person whenever one person directed the program. On the other hand 34 percent of the school systems reported a separate administrative head for each of the three parts of the school health program.

50

School Health Service Recommendations

The Conference on the Co-operation of the Physicians in the School Health and Physical Education Program held in Highland Park, Illinois, October 16-18, 1947, resulted in the following recommendations:

1. In order that a school health program may be kept continuously in proper relationship with public health services, welfare services, medical and dental services, and all the health resources of the community it is essential that some form of community health council be formed.

2. Wherever there is a school, the local community should budget for a school health program in the department of education, in the department of health, or in both.

3. Every school system should have an advisory school health council, every school a health committee, and every local medical society a school health committee.

4. The physician's time in the school may be best utilized in school medical advising rather than school medical inspecting. His services may also be most economically used if the routine medical examinations are spaced at three-year intervals during the school life of the child, if pupils in need of special examination and advice are carefully selected by the teacher and made the subject of a physician-teacher conference, and if considerable portions of the routine examinations are delegated to teachers and nurses.

5. Since immunization is necessary for protection, particularly in the in-

fancy and preschool period, the schools should definitely discourage the practice of postponing inoculation until the period of school entrance.

6. It is essential that teachers be aware of the physical handicaps of their pupils.

7. Instruction as to the need and value of voluntary planning for medical, dental, and hospital expenses through prepaid programs should be stressed in the high school curriculum.

8. Cumulative health records should be a part of the child's total school record throughout his school life.

9. In determining the content of the physical education program the physical education teacher, the physician, and the pupils should all play an appropriate part.

10. Physicians and physical education teachers in the various communities should arrange joint meetings for the discussion of such problems as the individual-adapted physical education program and the classification of pupils for physical education activities.

11. In those communities where graded types of physical education activities adapted to the varying needs of pupils are available in the school, permanent and blanket excuses from physical education should rarely if ever be given.

12. All school health service personnel should have experience in field work as a part of their preservice training.

13. Medical schools should give additional training to medical students in regard to (a) the relation of the physician to the school and the community, (b) the physiology of exercise and the function of physical education in the life of the child, (c) the pediatric examination as the model for school examinations, and (d) the function of the school physician as a medical adviser rather than a mere medical inspector.

14. Schools of public health should give increased emphasis in their training of health educators, physicians, and nurses to (a) school health, (b) the basic philosophy of general education, and (c) school organization and administration.

15. In every community there should be planning and in-service training conferences, institutes and workshops involving teachers, physicians, nurses, dentists, dental hygienists, and others interested in the community health program to work out problems related to that community.

16. There should be more research into many phases of school health service.

17. A joint committee composed of representatives named by the American Medical Association and the American Association for Health, Physical Education, and Recreation (perhaps as a subcommittee of the Joint Committee on Health Problems in Education of the National Education Association and American Medical Association) should be appointed to draw up recommenda-

tions regarding (a) the administration of the individual-adapted program of physical education, and (b) the medical examination and guidance of athletes.

18. Authoritative committees already functioning should be asked, or new committees should be formed, to study (a) posture, (b) the effects of vigorous physical activities on the cardiovascular system, (c) psychologic attitudes of participants toward physical education activities, and (d) energy expenditure in the various types of physical activities.

19. State medical societies and associations should be urged to plan jointly with their health department, education department, and education association for the development of conferences at the state level which are comparable to this conference at the national level. It is suggested that the needs of rural schools should receive special consideration.

51 *The Private Physician and the School Health Program*

Harold Jacobziner, M.D., and Robert W. Culbert, M.D., of New York City, report that in that city it is generally agreed that health maintenance, protection, and health promotion of the school-age child are chiefly the responsibility of the family. It is strongly recommended in that city that the family physician examine children prior to their admission to school and that he also provide the needed health guidance, counseling, follow-up, and treatment as required.

In New York City during 1952 approximately 50 percent of all health examinations for new pupils were made by the family physician. In 1936 family physicians completed only 14 percent of the examinations on all new students.

Although private physicians and school physicians made approximately the same number of health examinations of school children, the number of referrals to the family physician for follow-up studies numbered nearly 30,000 by the school physicians, but only about 8,000 recommendations were forthcoming from the private physicians. The reason for this discrepancy is not quite clear.

In a recent study during a ten-day period school physicians examined 14,132 children and discovered 9,003 with adverse health conditions. These children were referred to their family physicians for follow-up and care.

In New York City the private physician makes school health examinations, treats and follows up those in need of medical care, acts as a health educator and health counselor to both the family and the child, administers many immunizations against communicable diseases, serves as a consultant to the school health authorities, and in general co-operates well with school physicians. There is some evidence, however, that private physicians should be better informed on the aims, purposes, objectives, and procedures of the school health service.

The School Physician

The Committee on Professional Education of the American Public Health Association indicated in 1953 that there are over eight thousand physicians in the United States giving either part-time or full-time service to schools.

A large proportion of these school physicians are general practitioners. Only about 4 percent are pediatricians. About 20 percent are health officers.

School physicians may be employed either by the department of health or by the board of education or jointly. In some states the law requires that boards of education employ school physicians. In other places the health department is legally responsible for school medical work.

The Committee differentiates between two types of physicians. The first type is one who devotes his full time to the administration of a school health program and is essentially a director of school health services. The second type of school physician works under the supervision of the director of school health. The Committee looks upon this physician as a school medical adviser.

The Committee believes there are twelve major functions of a physician who serves as a director of school health services. These functions are as follows:

1. Planning and implementing the school health program.
2. Supervising school safety programs and the care of emergency sickness and injury of pupils.
3. The professional consultation in health education.
4. Formulation of plans for the health appraisal of pupils.
5. The development of plans for periodic medical examinations of pupils.
6. Formulating and supervising a program of health counseling.
7. Responsibility for the prevention and control of communicable diseases in the school.
8. General supervision of sanitation and other environmental health factors within the school buildings and on the school grounds.
9. The giving of medical advice on mental and emotional health influences to school authorities.
10. Professional guidance in the field of the teacher's health.
11. The performance of administrative functions such as the preparation of budgets and reports, the development of health and medical records, and the statistical analysis of records and results.
12. The performance of incidental functions and duties.

The Committee believes that the director of school health services should be a person with special training in both education and public health. He should be a physician with the personal qualities that are needed for co-operative effort.

53 *Pennsylvania to Pay Medical Bills of School Children of Low Income Brackets*

An editorial in the Pittsburgh *Post-Gazette* on March 23, 1948, called attention to the fact that Pennsylvania was starting an interesting experiment. With \$500,000 available for the period ending May 31, 1949, the state began to pay the medical, surgical, and dental bills of its poorest children. The local doctor or dentist, chosen by the parents, was to be paid directly by the state. No aid was to be approved except on recommendation of local school officials. The family need not be on relief for the child to receive aid, but the family would have to be in the lower income brackets.

54 *School Health in Philadelphia*

Ruth H. Weaver, M.D., M.P.H., director of the Division of Medical Services for the Philadelphia Board of Public Education, said in 1951 that in Pennsylvania, in 1945, the state legislature passed a new school health act which increased greatly the duties and responsibilities of school health officers. This act compelled schools to institute complete medical and dental examinations of pupils every other year, while they are members of odd grades.

By 1951 the Division of Medical Services of the Philadelphia Board of Public Education had made over 500,000 medical examinations of pupils and nearly 400,000 dental examinations. The professional personnel was composed of medical and dental examiners, school nurses, and dental hygienists.

The law required that a nurse be present at each complete physical examination and, further, that no more than four medical examinations be made in an hour. Much of the preliminary work was done by the nurse before the arrival of the physician. This included recording the family and past personal history given by the parent, weighing and measuring the pupil, taking the temperature, pulse, and respiration, and recording these findings. The law made vision testing the responsibility of the physician.

In 1947 a new law was passed requiring each school district to employ school nurses and to engage a sufficient number so as to provide one school nurse for the care of every fifteen hundred pupils enrolled. The State Health Department reimburses the school district \$800 a year for each certified school nurse carrying the required pupil load. The State Health Department also reimburses the school district at the rate of \$1.50 for every medical examination and seventy-five cents for every dental examination, which is in partial payment of the professional personnel.

There is no reimbursement for examinations made by private physicians or private dentists. About one percent of the medical examinations each year are made by private physicians.

Parents are urged to be present at the time of the examination. In elementary schools, approximately 80 percent of the parents attend. In a few schools with enterprising principals, the figure reaches 100 percent. There is much less difficulty about having defects treated if the parent witnesses the examination and confers with the doctor and nurse. In secondary schools, however, pupils frequently request their parents not to attend the examination, as they want to feel free to discuss their problems with the doctor alone.

Pennsylvania legislators have observed the administration of the School Health Act rather closely. They felt that defects found among children of indigent families were not being treated because of lack of financial aid. In order to remedy this condition a School Medical Assistance Program was organized.

The School Medical Assistance Program provides funds for medical, surgical, dental, and nursing care of pupils whose defects are found at the time of the complete medical or dental examination, provided the parents are financially unable to provide the treatment recommended.

55 *National Conference on Physicians and Schools*

Guy V. Rice, M.D., of the Georgia Department of Public Health, said in 1952 that at the National Conference on Physicians and Schools those in attendance broke into five groups to study the following problems, the nature of which gave some indication as to matters of concern to educators in their relationships to physicians at that time:

1. Health appraisal of school children.
2. Emergency service for accidents and illnesses.
3. Health services in athletics and physical education.
4. Follow-up to meet child health needs.
5. New concepts in the control of communicable diseases.

56 *The School Health Examination*

Charles C. Wilson, M.D., of Yale University, stated in 1947 that school health examinations should achieve at least five main purposes:

1. They should provide teachers with information concerning the growth and health status of each pupil.
2. They should identify pupils who need further examination.
3. They should identify pupils who need treatment.
4. They should identify pupils whose school programs need to be modified.
5. They should be vital and constructive educational experiences for the pupils.

Dr. Wilson also pointed out that if these broad purposes of health examina-

tions are accepted, then we need to consider ways by which many school health programs can be improved.

1. Health appraisals in the schools should be broadened. In addition to a medical examination, the health appraisal of a pupil requires that use be made of a health history, selected screening tests, teachers' observations, and, sometimes, psychological tests.

2. The quality of medical examinations should be considered as more important than quantity. Less frequent but thorough examinations are more valuable than superficial annual examinations.

3. Adequate health counseling services should be provided.

4. Counseling should be co-ordinated with treatment programs. Counseling cannot be fully effective unless there are adequate treatment facilities in the community.

5. Objectives should be evaluated in terms of results. The inadequacy of reports that show the real results of school health programs makes it impossible to tell what is being accomplished by the money spent for school health services.

57

Astoria Plan Succeeds—I

Alfred Yankauer, Jr., M.D., of New York City, reported in 1947 on a study of the effectiveness of the Astoria Plan for rendering school medical service. The plan had operated for a period of six years in some New York schools at that time.

This plan centers around the keeping of health records and a yearly conference between the teacher and the school nurse in which the health status of each pupil is reviewed.

Children with problems which cannot be handled by the teacher or nurse are referred to the school physician. Routine health examinations by the school physician are performed only on entering elementary school children who have not been examined by an outside agency. Throughout the remainder of elementary school the child is examined only if selected for such service at the teacher-nurse conference.

This report was concerned with operation of the plan in two elementary schools, covering 114 pupils who had attended for the six years during which the plan had been in operation.

Of the physical defects found in this group on re-examination, 31 percent had not been discovered under the Astoria Plan. However, most of these were minor defects. A total of 69 percent of the defects had been discovered and 61 percent were under medical care, while 8 percent were not receiving proper attention.

The greatest deficiency of the Astoria Plan appeared to be in the recog-

nition of emotional and mental health problems. Of the group studied, 38 percent appeared to have disturbing factors in their environment which contributed to some psychosomatic problem.

Although in many cases teachers had observed distorted behavior on the part of these children, the significance of the behavior had not always been appreciated.

In general, conclusions from the study were that the Astoria Plan had functioned satisfactorily during the six years, but that there was a need for further study and care of emotional disturbances among school children.

58

Astoria Plan Succeeds—II

Alfred Yankauer, M.D., of Rochester, New York, gave an account in 1951 on an evaluation of the Astoria Plan based on health examinations of 334 elementary school children in nine elementary schools of New York City.

The Astoria Plan, which was adopted by some schools in the city of New York in 1940, replaced the annual physical examination of school children with an annual teacher-nurse conference. At this conference, children are selected for examination by the school physician. Routine physical examinations are required only on entrance to school and on graduation from the eighth grade.

This study was designed to discover whether or not adverse health conditions go unrecognized when annual physical examinations are not performed.

Medical examinations of the 334 children were financed by two voluntary health organizations, and the findings of this appraisal were correlated with the school health records of each child.

Only twenty-two adverse health conditions unknown to the school were discovered by the medical examinations. On the other hand, fifteen health problems of these children were known to the school, but not discovered by the medical examination. It was also concluded that eight of the twenty-two conditions found on examination might have been obvious at the initial school appraisal, but that in 88 percent of these eight conditions the examinations were done by the family physician rather than the school doctor.

It was concluded also that the twenty-two adverse conditions unknown to the school were of a minor nature.

Dr. Yankauer judged that the Astoria Plan of rendering school medical service was functioning satisfactorily as a means of discovering pupil health problems.

59

Astoria Plan Needs Strengthening

Harold Jacobziner, M.D., of New York City, stated in 1951 that the Astoria Plan relies heavily on the private physician. It is the private physician who

examines approximately 50 percent of all new pupils. It is very important, therefore, that the physician look upon health appraisal as an opportunity for preventive medicine.

The Astoria Plan has been effective in securing the presence of 75 percent of the parents at the health examinations, in contrast to 30 percent before the plan was put into operation. Examinations by private physicians increased from 14 percent in 1936 to over 50 percent in 1949. Better health records, qualified personnel, co-ordination of services, and individual guidance have resulted in better follow-up and prompt correction of defects found.

In a cross-section study of the health status of children examined by school physicians in New York City in March 1949, some 11,171 defects were recorded on 14,132 children. Of these defects, 46 percent were newly discovered during the study. According to Dr. Jacobziner this finding implies that many adverse health conditions are not detected by the Astoria Plan and that routine examinations may be needed periodically.

60***Schedule for School Health Examinations***

R. E. Coker, Jr., M.D., of the North Carolina State Board of Health, reports that in that state a system of priorities has been established for school medical examinations in approximately the following order:

1. Children about to enter or in the first grade.
2. Children suspected of having some health problem on the basis of day-to-day observations by the teacher and the public health nurse.
3. Ninth grade children because of the educational value of the examinations as a part of the ninth grade health course.
4. Children in the third, sixth, and twelfth grades.

The general plan is that if annual examinations are not made by the family physician, there should be at least an examination at entrance to school, followed, where possible, by periodic examinations about every three years.

61***School Health Examinations***

Neil Castaldo, M.D., of Cranford, New Jersey, says the school physician should spend most of his time examining children referred to him by the ones who know them best: their teachers.

The teacher should refer the child to the school nurse for what she considers an abnormality. The school nurse then can arrange with the school physician for examination of the child.

According to Dr. Castaldo, the school health program will be dynamic and effective when:

1. All preschool children are examined thoroughly by the family physician.

2. All preschool children receive inoculations against diphtheria, whooping cough, and tetanus, as well as vaccination against smallpox.
3. Children who appear to the teacher to have a physical or mental defect or who seem ill are referred to the school nurse, and these children are then examined by the school physician.
4. The school physician after examination makes a provisional diagnosis and recommends treatment by the family physician.
5. Follow-up is done by the school nurse to show parents the need for action to restore health, correct abnormalities, or initiate treatment.

62***Health Inspections by Teachers***

Ben W. Miller, Ph.D., of Indiana University conducted a study which he reported in 1943 and in which 14 teachers and 14 physicians made physical inspections of 96 school children and then compared results.

The data on 13,824 distinct judgments were analyzed to show the objectivity, reliability, and validity of the teachers' judgments, using the physicians' judgments as the criterion.

It was found that 90 percent of the teachers' judgments were corroborated by the physicians. When outstanding disagreements only were considered, the teachers erred to the extent of merely two-tenths of 1 percent.

Teachers did not tend to overlook defects, but they underestimated slightly the normal child. In judging normal conditions the teachers erred by 7.2 percent.

Male teachers made significantly fewer errors on total judgments than the female teachers. The regular teachers of the pupils inspected made significantly fewer errors than the others. The validity of the teacher's judgment was improved when she inspected her own pupils.

Teachers reported an average of 6 percent more defects than the physicians.

63***Special "Health Examiners" Not Approved for Washington State Schools***

John Kahl, M.D., of the Washington State Department of Health, reports that in a recent survey of public education in the state of Washington, Dr. Jesse Williams had suggested the use of a special "health examiner" as a new and extreme departure from usual school health procedures. The proposal called for thorough school health examinations conducted by a school person, trained to examine the children and to determine the presence of abnormalities—with no responsibility for diagnosis. "Health examiners" would be, in short, diagnosticians of the normal, needing none of the third- or fourth-year medical training courses, but only a knowledge of the basic sciences.

This recommendation met with unfavorable reception among public

health workers in the state of Washington, primarily on the basis that the evaluation and determination of what is "normal" and what is "abnormal" often requires expert diagnostic skill.

64***Emergency Care of School Children***

Donald A. Dukelow, M.D., and Fred V. Hein, Ph.D., report that at the fourth conference of representatives from medical societies, health departments, and educators, which was held in 1953, it was agreed that sudden illness and accidents occur in every school.

Group discussions indicated that procedure followed in an emergency can be very important to the child and must be planned well in advance to be effective.

Physicians, nurses, and teachers are able to work closely together in the emergency care of a child when policies and standard procedures are agreed upon by medical societies, health departments, and education departments.

Several members of the faculty of each school should be trained in first aid, and they should be in a position to administer immediate assistance since the nurse may be away from the school, counseling with a parent or engaged in some other activity.

Each child's health record should contain the names of the physicians of first and second choice to be called in case the parents are unable to be reached. Because certain injuries may require immediate hospitalization, the choice of hospitals should be included, so that the child may be given prompt care even though the parent cannot be reached immediately.

65 *Detection of the School Child in Need of Health Supervision*

Jean Downes, of the Milbank Memorial Fund, reported in 1945 a study of 1,060 school children to discover whether or not sickness records might be used as a means for selecting those in greatest need of medical and public health supervision.

The study revealed that those children having two or more attacks of illness (excluding acute communicable diseases, infectious skin conditions, and tonsillectomies) were found to have the greatest chance of experiencing disabling or bed illnesses and illnesses considered by the family as severe enough to require medical care.

The brothers and sisters of a child selected because of two or more attacks of illness had much higher attack-rates of illness over a period of three to five years than did siblings of a child selected on the basis of one or no illness.

Families were found to vary significantly with respect to illness of the school-age child. There were sickly families and healthy families, and indi-

vidual children in particular families tended to have somewhat similar illness rates over a three-year period.

There was a tendency for children to remain at about the same sickness level over a period of five years. In the group studied there were wide differences, but sickly children remained sickly.

The problem of the health of the school child appears to be a problem highly concentrated in certain families and thus concerns the health of all members of the family and not of the individual child alone.

66

Progress of School Health in Illinois

Foster Keagle, of the Illinois State Department of Public Instruction, reported that the summer of 1946 marked the third year since the passing of the Illinois Health and Physical Education Law and the second year that it was in operation in the schools of Illinois. The law provided principally for a physical examination at least once every four years and a daily period of physical education in the schools each week.

The progress made in administering the physical examinations was far ahead of what had been expected at this time. In the winter of 1946, with the co-operation of the county superintendents of schools, a survey was made of the physical examinations in the rural schools of Illinois. At that time 82 percent of the school children in rural areas had received their physical examinations in accordance with the provisions of the law.

In the city elementary schools 90 percent of the children were being provided with physical examinations at least once every four years, and of the high schools, 92 percent were being provided examinations in at least one class each year.

There was no set plan of physical examinations in the state. In general, the larger communities seemed to prefer the clinic types where a group of several doctors, dentists, and nurses aided in examining a large number of pupils at one time. Ottawa, Danville, and Homewood were a few of the schools that had conducted outstanding examinations under this plan.

In the smaller communities the general procedure was to provide examination cards and have the children examined by their family physicians during the summer months.

The majority of schools were examining the children at the beginning of the first, fifth, and seventh grades, this frequency being interpreted as meeting the law. However, there were two definite trends other than this procedure. In school systems having kindergartens, those entering kindergarten and children in the fourth and eighth grades were being examined. Many high schools preferred to examine all incoming freshmen and senior students.

A number of high schools, including the whole system of Chicago, were combining one day a week for four years of health instruction, safety, and

first aid with physical education classes. Other schools were offering health instruction for one or two years, one day a week, in conjunction with physical education. The trend was to combine health instruction with physical education, although a number of the larger high schools had provided special teachers of health with instruction daily for one or two semesters during the four years. Twenty high schools in the state were providing health instruction to high school seniors through the Kellogg plan under the supervision of a member of the staff of health and physical education of the Office of Public Instruction.

67

School Health Services in New York City

Robert W. Culbert, M.D., and Harold Jacobziner, M.D., from the Department of Health, New York City, reported in 1953 that since its inception more than fifty years ago, health service to school children has been furnished by practicing physicians working on a part-time basis for the Department of Health in New York City.

Currently, four full-time pediatricians and a staff of 250 part-time physicians of the Bureau of School Health are engaged in school health activities.

Public health nursing service is furnished by the Bureau of Nursing in an amount equivalent to 375 full-time nurses. Of the available nursing time of the Department of Health, 47 percent is applied to health service to children of school age.

The school health service is not a treatment agency. All children discovered to have health problems are referred either to their private physicians or to other treatment agencies. The major objective of the school health service of New York City is to discover the child in need of health care and to see that he receives proper medical treatment.

Health examinations are required of children newly admitted to school, for those in the sixth grade, and for those entering high school. Children are referred to the school physician for screening or for complete examination from the teacher-nurse conference, the doctor-parent conference, home visits by the nurse and doctor, and nurse conferences with educators and community health educators, including the private physicians. A training program for doctors, teachers, nurses, and medical students in school health services is also provided.

At the high school level an entrance examination is required of those who have not been examined prior to admission to high school. The family physician plays an important part in this examination. Another routine health examination or conference is held at some time during the last year of high school, preferably during the first half of the final year.

In the intervals, students are referred to the medical room by the various classroom teachers and by the health education staff. The latter, which is

concerned with all health teaching and physical education, comes into contact with all students and does an excellent screening job.

Included in the program are provisions for examining students who wish to enter employment either temporarily or permanently.

Students of five medical schools in New York City receive orientation in school health service by direct observation of the program in operation and through conferences with school supervisory nurses, physicians, and health officers.

A program of research is currently under way to measure the rate of conversion from negative to positive tuberculin reactions in a group of 14,000 high school students. A study of blood pressure is being made on about 3,000 elementary school children. Other studies are being made pertaining to rheumatic fever and reasons why students leave high school before graduation.

Chapter V

Conservation of Vision

Eye specialists report that the detection of visual disorders in children presents many more obstacles than with adults, for the simple reason that children rarely complain about diseases of the eyes.

A study of eye problems among Denver school children suggests that approximately 70 percent of the children in school will have no visual difficulties at any time. Of the remaining 30 percent, approximately 6 percent will have glasses prescribed even though no visual disorder is detected by the Snellen chart. It was judged from this study that the majority of children with significant visual problems will be found by routine eye screening of pupils in kindergarten, grades one, three, and eight. Children who have been referred for special eye examinations should be rescreened annually, however. The need for more effective follow-up is suggested in this study, which revealed that 17 percent of those with suspicious findings had obtained no correction.

In Michigan, an analysis of the vision tests of 350,000 school children has shown that approximately 20 percent had defective vision and that about half of this group were not aware of the visual loss.

In Illinois, a unique plan has been established to co-ordinate optometric and medical eye care. The co-operation of the two groups of eye specialists was brought about by the Illinois Society for the Prevention of Blindness.

In Peoria, Illinois, schools, vision screening is done in part by carefully selected students from the School of Education at Bradley University.

It has been recommended that the plus sphere test be used for the detection of farsightedness in school children. The administration of the plus sphere test is not difficult or time-consuming. The test can be given by the classroom teacher and the testing equipment is relatively simple and inexpensive. It is reported that statistics show that approximately 7 percent of all school children fail to pass the plus sphere test.

The Massachusetts vision test has come to be widely used throughout the United States for the vision testing of school children. This test has been approved by the Council on Physical Therapy of the American Medical Association and by other responsible organizations.

The routine use of telebinocular tests has been found to be unsatisfactory because too many children are screened out for failure to pass the test. In one study 97 students out of 100 failed to pass the telebinocular tests, although eye specialists passed 52 of these pupils. These tests, however, can and should be used in special studies even though they are not recommended for routine vision testing of all pupils.

Comparative studies of different vision-testing methods suggest that there is still room for considerable improvement in procedures for screening elementary school children for visual defects.

Inflammation of the eyes, or conjunctivitis, has been found to be a significant cause of absenteeism and disability in school children.

The problem of strabismus, or muscle imbalance, has received considerable attention in the school health literature. Treatment for this condition should be started during the preschool years, if possible, but the disorder should not be overlooked by school authorities. An important effect of this type of eye disorder is that which involves the personality of the child. With uncorrected muscle imbalance the child is apt to develop problem behavior and an inferiority complex.

In a study involving 1,281 children under 16 years of age, it was found that approximately 30 percent of the children with muscle imbalance had deviations in their brain wave recordings compared with less than 1 percent of children who were normal. It is suggested on the basis of this study that children who show neuro-ocular disorder should have a careful study with the electroencephalograph for the detection of a possible central basis for the disorder.

In Los Angeles it was found that 32 pupils who had viewed the eclipse of November 12, 1947, had received damage to the eyes. It was found that smoked glass or ordinary commercial sunglasses had not protected the eyes adequately when the eclipse was viewed through these materials.

The American Medical Association has stated that television is not inherently harmful to the eyes but that there are certain sensible precautions that anyone watching television should observe. People with defects in convergence, accommodation, fusion, and refraction may suffer ocular discomfort sooner than others.

It has been stated that although the list of acute emergencies of the eye is numerous, there are four which are most commonly encountered by the medical profession. These acute emergencies are foreign bodies in the eye, contusion of the eye, chemical burns of the eye, and laceration of the eyelids and surrounding tissues. All these conditions demand emergency medical treatment.

Recommendations have been made by the American Medical Association regarding the participation of athletes in vigorous sports when there has already been some loss of vision. The modern outlook toward the handicapped is to encourage as near normal activity as possible, but to advise participation in less hazardous sports when there is the possibility of further injury.

Richard G. Scobee, M.D., of Washington University, reported in 1949 that case finding in children presents many more obstacles than case finding

in adults, for the simple reason that children rarely complain about diseases of the eyes.

Children are rather notorious mimics. They form habits which frequently have no relationship to any need. Thus the child who puts his head down very close to his work often may not be doing it because of eyestrain. He may have discovered that it is one way to get attention. Certainly children's choices of seat location in the motion picture theater are no criterion, because they all go down to the front, and thus one might think they are all nearsighted. The fact that a child chooses to sit in the schoolroom as far back as possible from the teacher's watchful eye does not mean at all that the child is farsighted.

Children who blink a great deal are often thought by schoolteachers and anxious parents to be victims of eyestrain. Much more commonly they are victims of mimicry.

Children do not complain of poor vision. If they happen to be nearsighted, they don't know what there is to see, so they are not aware that they are missing something. If they happen to be farsighted, they see as much as they can, and they unconsciously stop paying attention when the strain becomes too great.

Testing visual acuity is an art. There are many variables encountered. First of all, the child has to be familiarized with the test, and an experienced examiner ordinarily can do this in a few minutes.

Testing visual acuity must not be hurried. The child can sense when you are in a hurry, and as soon as he does, most of the results are worthless. A child who is to have his visual acuity tested should be alone with the examiners.

There is no problem about case finding so far as the cross-eyed child is concerned. His defect is obvious. The difficulty is in trying to convince the parents that something is wrong with their child's eyes. It is natural for parents to deny even in the face of obvious facts that their child has a defect.

There are two eye conditions in which the child's eyes are not obviously crossed: when the eyes are straight a fair amount of the time, but at times turn either in or out. Of the two types, the one in which the eye turns in intermittently has received much better treatment in the past than the type in which the eye turns out.

Often the schoolteacher does not see the defect in the child whose eyes turn out, unless the child is tired, because as a rule that symptom occurs only with fatigue. It begins by occurring occasionally in childhood, becomes more frequent as the patient gets older, and by the time the adult has reached the age of thirty-five or forty it may be constant. Reaching the child at an early age assures that he will have two seeing eyes working together when he grows up. Fusion, and getting the two eyes to work as a team, can be achieved in a five-year-old when often it is not possible in a patient who is thirty-five.

In the past, this intermittent condition has been labeled as a condition about which "if exercises do not help it, nothing can be done." Today we know that surgery offers an almost immediate and complete cure for this condition. If the deviation is marked, exercises will temporarily relieve the situation, but the child must continue with exercises for the rest of his life. Yet surgery offers a definite and permanent cure.

It is of interest to note that a one-eyed man never has headaches from eye-strain. It takes two eyes to produce a headache of this type, because the difficulty arises from trying to use two eyes together, as a team. When patients with such a headache become tired and an eye turns out, all symptoms of eye-strain go away.

69***Eye Problems in Denver Schools***

Gertrude E. Cromwell, supervisor of nursing for the Denver Public Schools, reports a study of 996 cumulative health records of pupils graduating in June 1952.

During this school experience each child has received ten or more visual screenings given by the school nurses under relatively standard conditions.

It was found that approximately 70 percent of the children have had no visual difficulties at any time. Approximately 25 percent of the children, with a vision screen record of 20/30 in one or both eyes or because of complaints of difficulty in seeing, were referred to eye specialists for evaluation. Approximately 6 percent of the children had secured glasses despite the fact that no eye difficulties had been found by the Snellen chart screening done in the schools.

It was concluded from this study that the majority of children with significant visual problems would be found by routine eye screening of the pupils in kindergarten and grades one, three, and eight. It was also judged advisable that any children who had been referred for special examination should be rescreened annually.

It was recommended by those conducting this study that more careful observation of the children by teachers and nurses should be emphasized. Children who seem to have visual difficulties or who complain of symptoms should be referred for a full examination by an ophthalmologist. That a better system of follow-up and reporting of correction was needed was indicated by the fact that no correction had been obtained for 248 pupils, or 17 percent of those with suspicious findings.

70***Eye Defects of Michigan School Children***

Michigan public health officials have reported that an analysis of vision tests of 350,000 school children in that state has shown that approximately

20 percent have defective vision and that about half of this group are not aware of the visual loss.

71

Children with Visual Handicaps

C. Edith Kerby of the National Society for the Prevention of Blindness summarized in 1952 a national study of 7,310 partially seeing school children in American schools.

Errors of refraction—mostly nearsightedness, farsightedness, and astigmatism—accounted for 49 percent of the children with visual handicaps. Developmental anomalies, such as cataract, and dislocated lens anomalies, such as cataract and dislocated lens, accounted for about 22 percent of the cases, and defects of muscle function, such as muscle imbalance, for about 18 percent of the total. These three broad categories thus were the sources for about 90 percent of all the visual handicaps in the groups studied. Infectious diseases and injuries accounted for another 5 percent.

In general, only those children with visual acuity between 20/70 and 20/200 in the better eye, after all medical and optical help has been provided, are considered as candidates for special-education classes.

72

Vision Testing in the Schools

Dorothy B. Nyswander, Ph.D., director of the District Health Education Demonstration, Department of Health, City of New York, reported in 1942 that the Astoria School Health Study had revealed the following significant findings in relation to the vision procedures followed throughout the city at that time:

1. *The time interval between detection and correction of visual defects* increased from 10 months for children in the second grade to 29 months for those in the eighth grade.

2. *Medical records were incomplete.* Of the medical cards of 79 children with visual defects only half contained any data on vision. For only 21 of the 79 cases were there notations showing that the nurse assisted in the follow-up work. In no single instance on either the medical or class card were there statements as to the conditions under which the glasses should be worn, when the child should have his glasses rechecked, or whether or not the glasses obtained were giving maximum correction.

3. *The Snellen test was efficiently administered by teachers.* A total of 7,459 children from all elementary grades were tested in the classroom by their respective teachers with the Snellen chart. Ninety-one percent of the children found by teachers to test 20/50 or worse were found on retest by a technician to test 20/40 or worse. It was decided after the study to refer chil-

dren directly to the ophthalmologist without rechecking by the nurse if the teacher found them to test 20/50 or worse. This change made a substantial saving in nursing time. The nurse did retest children with 20/40 scores according to teacher examination.

4. *Follow-up methods needed improvement*, as shown by an analysis of 554 records of children whose parents had been notified of a vision condition in the usual manner. After a three-month period only 40 percent had obtained eye care. New methods of follow-up were devised.

73 *Optometrists and Oculists Get Together in Illinois*

Franklin M. Foote, M.D., executive director of the National Society for the Prevention of Blindness, reported in 1950 that in the United States there were only 2,000 ophthalmologists certified by the American Board whereas there were 18,000 optometrists. Every one of the forty-eight states licenses optometrists to do refractions and to give eye exercises for muscle imbalance.

In Illinois, through the efforts of the Illinois Society for the Prevention of Blindness, a unique plan was set up to co-ordinate optometric and medical eye care. A joint committee included the president of the state medical society, the secretary of the Chicago Ophthalmological Society, and the president and secretary of the state optometric society.

This committee reviewed screening and referral procedures in the elementary and high schools and agreed that reports to parents should simply state that the child needs a complete eye examination.

It was agreed that when the optometrist sees a school child, he should refer the child to an ophthalmologist if there is corrected visual acuity of worse than 20/30 in either eye or if there is any obvious or questionable pathological alteration of the eye. In cases of such referral, the ophthalmologist was to send a report of his findings to the optometrist and also to send the child back for refraction if such service were needed.

These recommendations were approved in February 1949 by the Illinois Optometric Association, the Chicago Ophthalmological Society, and the executive council of the Illinois State Medical Society. The Optometric Association also set up a certifying board to pass on ethical and professional qualifications of optometrists for this program.

74 *Visual Screening in Peoria Schools*

Clifton S. Turner, M.D., and J. A. Potter, O.D., of Peoria, Illinois, reported in 1950 on the Peoria visual screening project.

The primary purpose of this project was to detect school children with visual problems and to ascertain what could be done about them. Planning of the project involved co-operation of the Illinois Society for the Prevention

of Blindness, the Illinois State Medical Society, and the Illinois Optometric Association.

Carefully selected students from the School of Education at Bradley University were trained as technicians to participate in the screening process. This training consisted of becoming acquainted with a complete standard procedure of vision testing.

School principals prepared schedules for testing pupils that involved little conflict with the school routine, so that a minimum of time was lost from classwork. Only a few students were sent to the testing room at one time. The principal also sent out a letter informing the parents when their children were to be tested.

The Massachusetts vision test was the instrument used for screening. This test is merely a gross screening method which tests five visual skills. The first, referred to as the nearsighted test, tells only whether the child's visual acuity is below 20/30. What should be done about this condition, if anything, must be determined by a professional man after a complete examination. The second test tells whether the child has 20/20 vision through a plus lens. This test is designed to find the farsighted child. The last three tests are muscle balance tests at far and near distances. Lateral and vertical balance tests are done at twenty feet, and a lateral test is also done at sixteen inches.

The children who passed the test were given no notice. It was found that parents who were informed that their children had passed the test assumed that the child had good eyes and that vision lasts forever.

A total of 12,667 students in the Peoria public and parochial grade schools were tested. Of this number, 17.57 percent of the students were below the minimum standard. There was a gradual increase in visual defects from 25 percent in the first grade to 53 percent in the eighth grade. Of 2,226 students below minimum standard, nearly 21 percent obtained professional care.

Several weaknesses were revealed in the program, the chief of which was the need for a follow-up of unresponsive parents. Public health nurses demonstrated their effectiveness in follow-up procedures with these parents.

75

Visual Screening in Oak Park

Palmer Good, M.D., and Helen Holmes, R.N., of Oak Park, Illinois, state that for over twenty years this community has had an annual visual screening program for the public elementary school children.

Up to 1945, the Snellen "E" chart was used with the window card and controlled reflected light. Because a more sensitive method of screening was desired, the school authorities secured two units of the Massachusetts vision testing equipment and used these for two years.

During these two years there was not complete satisfaction with the equipment because there were too many needless referrals and the muscle-testing

part of the screening for smaller children was time-consuming and gave uncertain results.

It was decided to return to the Snellen "E" chart and to recheck all children who failed the first screening test. The entire Snellen chart was used so that various size letters would be instantly available for checking and rechecking and the large letters could be used to stimulate children to proceed from the successful reading of large letters to the more difficult task of reading the smaller ones.

Special equipment was devised for the testing of eye muscle defects. This equipment consisted of a metal box containing a square, illuminated target placed thirty inches from the eyes. For the test the child was moved before an eight-degree prism so that he looked through it first with one eye and then the other. This test uses the principle of prism dissociation. The entire vision screening test was given to all children in the first through eighth grades during the second and third weeks of school in the fall.

The percentage of children already wearing glasses, plus those who failed the vision screening tests, is indicated in the following table:

	Grade Percentage*
Grade one	9
Grade two	12
Grade three	12
Grade four	18
Grade five	20
Grade six	21
Grade seven	25
Grade eight	26

* Rounded to the nearest whole number.

76

The Plus Sphere Test for Farsightedness

David Vanderslice, M.D., director of School Health in Flint, Michigan, in 1946, said at that time that the great majority of school children find out about their vision defects as a direct result of routine school vision tests.

The Snellen test is a very good method of finding pupils who are nearsighted. Although cases of nearsightedness are nearly always discovered with the Snellen test, farsightedness is rarely uncovered and then only the very severe types are revealed.

It is known, however, that farsightedness is a much more common defect than nearsightedness and that many farsighted children are severely handicapped in their school work. It is apparent, therefore, that the Snellen test does an incomplete job of screening out children with handicapping vision defects.

Many farsighted eyes are able to overcome the optical defect by the power of accommodation. When this is overdone, the symptoms of eye strain arise. With continued near-use of the eyes the print or near work becomes blurred, the eyes water, and headache may occur, especially toward the end of the day. These symptoms may become so aggravated that to do near work is very uncomfortable and the child, therefore, does not like school work.

The plus sphere test is one of a battery of tests which make up the Massachusetts vision test. It is designed to detect those pupils who pass the Snellen test but who are sufficiently farsighted to suffer fatigue, nervousness, and poor concentration.

The administration of the plus sphere test is not difficult nor time-consuming. The test can be given by the teacher and the test equipment is simple and inexpensive.

A Snellen (Symbol E) chart is used for the test. The chart is placed at eye level, 20 feet from the child to be examined. The plus sphere glasses are placed on the child and, as with the Snellen test, the vision in each eye is tested separately.

The child is asked to read the 20 line on the Snellen chart; if he can read the line correctly he is farsighted. The child who is not farsighted will complain that the symbols are blurred, for the plus sphere glasses will shorten the focal length of the retina. Only those who pass the Snellen test are given the plus sphere test.

Statistics reveal that approximately 7 percent of children tested fail the plus sphere test compared with about 17 percent who earn a score of 20/30 in both eyes on the Snellen test.

77

Massachusetts Vision Test

The Massachusetts vision test is a method of school vision testing which provides for the screening of children to determine the need of detailed ocular examination and possible treatment. A notable feature of the test lies in the fact that it can be applied to young children. Five- and six-year-old children needing ocular attention can be detected when the test series is applied by those skilled in the handling of young children.

The test series is composed of three parts. Part One screens out cases of low visual acuity. The charts are constructed to minimize the possibility of memorizing. Illumination of the charts is standardized. The Snellen Illiterate E is employed throughout because of the variation in difficulty between different letters and different numbers. Part Two detects those who may pass the visual acuity tests but who have a hyperopic error which is latent and may require correction. Part Three indicates cases in which there is difficulty in using the two eyes together.

In the instruction booklet for the test it is recommended that the testing be done in a room in which a 20-foot distance between the child and the test charts is available. Since the illumination for the tests is supplied electrically, window light is neither necessary nor desirable. A wall as far away from windows as possible should be chosen. Window shades should be drawn so that beams of light do not fall near or on the charts. The room need not be completely darkened.

The Massachusetts vision test was submitted to the Council on Physical Therapy of the American Medical Association by the Department of Public Health, Division of Child Hygiene, Commonwealth of Massachusetts, for consideration and possible acceptance.

The Council in 1943 reached the following conclusions concerning the apparatus:

1. It is a relatively simple and complete test, especially adapted for school children of the lower grades. Distance vision with elimination of lower hypermetropias and myopias as well as muscle balance are roughly measured.
2. It is purchasable as a single unit, which increases its desirability for schools and factories.
3. In this test the same distances which are employed in office and hospital practice are customarily used for measuring vision and muscular anomalies. Thus it differs from stereoscopic tests.
4. The instrument, apparently a pioneer in grouping several fundamentals into a single unit, is adapted for mass testing of visual function by nonmedical examiners.

The Council on Physical Therapy voted to accept the Massachusetts vision test for inclusion on its list of accepted devices.

78

The Use of Telebinocular Tests in Schools

The Louisiana State Department of Health stated in 1942 that the use of telebinocular tests in Louisiana resulted in a request for the State Department of Health to express judgment as to their value. In New Orleans the department consulted several ophthalmologists, whose advice was similar to that expressed by other authorities adjudging the telebinocular tests to be unsatisfactory because they screened out too many children for practical purposes and missed some children who needed to be referred for ocular attention. For example, in one study 97 students out of 100 failed to pass the telebinocular tests, although ophthalmologists passed 52 of these pupils.

The Louisiana State Department of Health concluded that the telebinocular tests were not satisfactory for screening out the children who should be referred to an eye specialist.

Vision Screening in Schools

Drs. Crane, Scobee, Foote, and Green report on a study in 1952 which was made to determine the relative efficiency of different vision-screening tests in the elementary schools.

The study was conducted in the public elementary schools of St. Louis, Missouri, and involved 609 sixth grade students and 606 first grade students from fourteen elementary schools.

Each of these pupils was given a complete ophthalmological examination. The screening procedures selected for study were conducted by three different testers: a technician, a nurse, and the pupil's classroom teacher.

The ophthalmologist or eye specialist referred 31 percent of the sixth grade students for correction. It was found that the nurse referred 57 percent of the students she tested, but that slightly fewer than half of these children actually needed care.

Of the various testing procedures used, the ortho-rater, sight-screener, and telebinocular tests correctly referred 23 to 25 percent of the sixth grade students, or about three-fourths of the 31 percent referred by the ophthalmologist. This was a high proportion of correct referral as compared with most of the other procedures, but these tests referred incorrectly an even larger number of students, amounting to about 30 percent of all the pupils. The total referrals amounted to at least half of the students tested.

The Snellen test correctly referred about half of the students referred by the ophthalmologists. It missed 10 to 20 percent more of the students who needed care than did the Massachusetts vision test, but it referred only about half as many students incorrectly.

Teacher judgment referred correctly 10 to 13 percent of the students or about two fifths of those referred by the ophthalmologists, but it referred incorrectly a considerably larger number, 19 percent of all the students tested.

The ortho-rater, sight-screener, and telebinocular tests took about the same amount of time to administer, but each of these took two to three times longer than the Massachusetts vision test.

It was found that none of the vision testing methods studied provide more than a rough screening procedure. The screening program that is best in one situation may be less suitable for another.

In one situation, as with the testing of poor readers, the purpose may be to obtain the greatest assurance possible that the students who are not referred do not have visual defects. In this case the procedures that give the highest percent of correct referrals might be preferred, even though they result in a large proportion of unnecessary referrals.

In another situation it may be preferable to use a procedure that gives fewer overreferrals even though it misses more of the students who should be referred.

It is obvious that the way is still open for considerable improvement in procedures for screening elementary school children for visual defects.

80

The Cross-Eyed Child

A. D. Prangen, M.D., of Rochester, Minnesota, reported in 1944 that there are two types of strabismus, the paralytic and the nonparalytic, and that the latter is more common.

The nonparalytic, more common kind of strabismus may result from a variety of causes. Usually a combination of factors is involved.

The "cross-eyed" child should receive early treatment, in fact as soon as the strabismus is noticed. Irreparable damage may result if the condition is not checked. A few children have temporary strabismus in infancy and early childhood, but medical attention should be sought until the condition is proved innocent.

The effect of strabismus is to lower vision in one eye. The tone and muscles of the eye tend to become abnormal. The fusion of images and higher co-ordination are inhibited. A vicious cycle is established that ruins the function of one eye and prevents the eyes working in unison in binocular vision. Since the condition becomes permanent at about the age of seven years, the treatment must be started before this age. An important effect of this type of eye disorder is that on the personality of the child. He is likely to develop a behavior problem or an inferiority complex.

Treatment divides itself into two periods, the first up to the age of two or three years and the second from then on. The sound eye must be blocked off (occluded) for several weeks at a time. This forces the child to use the other eye. Rotation exercises are also important. All should be under the guidance of a competent eye specialist.

When a child is about three years of age, more advanced training can be given. At this time a prescription of lenses which balance the vision of the eyes is a fundamental requirement.

Nonoperative treatment of strabismus will result in cure in about 50 per cent of the cases according to Dr. Prangen. When such treatment fails to bring definite improvement within six months to two years, surgical intervention may be advisable.

81

Squint in Children

Dan M. Gordon, M.D., of New York City, pointed out in 1946 that children cannot fuse images until about the age of four months, so that all infants may sometimes appear "cross-eyed" before this age.

After this age, medical aid should be sought within two weeks after the squint is noticed. Many children can be started on treatment almost at once

and the condition usually does not improve with age unless treatment is obtained. An ophthalmologist should be consulted for this eye-muscle imbalance.

Some children will appear cross-eyed or walleyed only when tired, hungry, or irritable. Others may always show their squint.

There are three cardinal rules of treatment: (1) if there are no symptoms, no treatment is necessary; (2) treatment must be started as early as possible; (3) treatment must be based on proper diagnosis. When surgery is necessary it is obvious that the operative approach must be directed toward the responsible muscles. The parents must understand that one operation alone may not be sufficient. It is better to undercorrect and operate again than to render a cross-eyed child walleyed or vice versa.

If glasses are prescribed for treatment they should be given a fair trial of about three months along with supplementary exercises if these are judged necessary.

If this method of treatment fails, then surgery should be considered.

82

The Problem of Cross-Eye

Dr. M. I. Steckler, of Los Angeles, said in 1950 that the parents of a cross-eyed child, in their anxiety and in a very short time, gain a wealth of misinformation. Even though proper lenses may aid in straightening the eyes, most parents are not interested in the child's being fitted for glasses. With respect to surgery, many believe that the procedure is similar to removing the involved eye, that the eye must be removed from the socket, worked on, and replaced; that the operation on the affected eye may destroy the vision; that even if the eye is straightened it may later deviate in the opposite direction. The most serious misunderstanding on the part of the parents is that they fail completely to appreciate the child's psychological problems, thinking he will outgrow the visual disorder and that no immediate medical or surgical attention is necessary. Thus the child is often neglected. Concerning these misconceptions the parents should know the following facts:

1. That in the great majority of cases, no cause for the crossed eye can be found.
2. That operation for correction of the crossed eye is performed on the outside muscles of the eye and has nothing to do with the internal structure of the eye, and will in no way damage the sight.
3. That surgery on the eye is painless even after operation.
4. That correction is purely scientific and not a hit-or-miss proposition.

The emotional torment of the squinting child can be relieved quite simply by the use of glasses, or surgical treatment, or both. This should be done as early in life as possible. If a six-month-old infant has cross-eye and an eye

examination shows that glasses will aid in correcting the defect, he should be supplied with the proper lenses without delay. Both the physician and the parents should know that not one spontaneous cure of squint occurs in a hundred cases, that no matter what his age, a squinting child should be examined by an eye specialist, an ophthalmologist, as soon as the defect is noted because delay may result in permanent damage. Not all children with squint need surgery, and if surgery is necessary it is not hazardous to life or sight.

83 *Eye Inflammation in Elementary School Children*

Dorland J. Davis and Virginia D. Hines reported in 1952 on a study made to assess the importance of conjunctivitis as a cause of absenteeism and disability in the school children of Thomas County, Georgia. Studies were made in six white and six Negro elementary schools of that county from October 1949 to December 1950.

The data were collected under the direct supervision of a Public Health Service nurse who was participating in the field work of the investigation.

An analysis of the records of these studies on the basis of pupil-days experience showed that the highest incidence of the disease occurred during September and October, when about 15 percent of all absences in pupil-days were due to conjunctivitis.

When calculated in pupil-days, the rates of absence due to conjunctivitis and occurrence in children attending schools were higher in grades four to six for both white and Negro children, and higher in the white schools than in the Negro schools.

In grades one to six of the twelve schools under study during the school year 1950, a total of 806 pupil-days of absence were ascribed to conjunctivitis, and 2,709 pupil-days of conjunctival disease were observed in children attending school.

The data do not represent a true incidence of the disease in these school children because of the methods used in the collection of records, but they are useful as an indication of the magnitude of the problem, of the seasonal occurrence, and of the white and Negro incidence in that county.

84 *Eye Disorders and the Electroencephalogram*

Drs. Levinson, Gibbs, Stillerman, and Perlstein, of Chicago, reported in 1951 on a study of 1,281 children under sixteen years of age in which correlations were made between brain wave findings and the presence of eye disorders.

In the total group of 1,281 cases, eye disorders were found in 397 instances.

Strabismus, or muscle imbalance, was the most common condition noted and accounted for 73 percent of the total eye disorders.

The study showed that 30 percent of the children with strabismus, who otherwise appeared normal, had deviations in their brain wave recordings, compared with less than 1 percent of 180 children who were entirely normal.

In patients with eye disorders, findings suggestive of some neurological disturbance were revealed by the electroencephalograph six times more commonly in the occipital region of the brain than in all other locations combined.

On the basis of this study it would seem that children who show some neuro-ocular disorder should have a careful study with the electroencephalograph for the detection of a possible central basis for the disorder. Conversely, patients who show an occipital focus on the electroencephalogram should have a thorough eye examination to rule out visual abnormalities.

85

Eye Injury Due to Viewing an Eclipse

Paul Tower, M.D., reported in 1948 that after the eclipse of November 12, 1947, in Los Angeles, California, thirty-two pupils came to the Eye Department of the Yale Street Health Clinic with complaints of poor vision or black spots before the eyes.

School records showed that before the eclipse the vision of all these children had been normal. On careful eye examination a diagnosis of "solar retinitis" or "eclipse blindness" was made on all thirty-two students. Several layers of the delicate inner structures of the eye were found to have been injured. In some cases the damage to the inner structure took the shape of the bright ring around the dark shadow covering the sun during eclipse.

In most cases only one eye was injured, but in six children permanent burns had been suffered in both eyes.

All of the children reported that they had looked at the eclipse and that an image of the sun, encircled by a luminous corona, had remained before their eyes for some time after they had ceased looking at the eclipse, but the picture was reversed, the corona being dark and the sun being bright. Later black spots were reported as appearing before their eyes, with resultant blotting out of part of the field of vision. Seven months after the injury vision had improved in only two of the thirty-two children.

It was found that smoked glass, photographic film, and ordinary commercial sunglasses had not protected the eyes adequately when the eclipse was viewed through these materials.

86

Television and Eyestrain

Derrick Vail, M.D., called attention in 1950 to the fact that the American Medical Association had published concerning television the following sensible suggestions which deserve emphasis:

1. In general, a large screen is considered better than a small one, because it allows clearer vision at a greater distance and gives a large visual angle.
2. A distance of ten feet or more from the screen is better than a shorter distance, provided the size of the screen in the room permits.
3. The nearer perpendicularly the screen is viewed, the better. Too much of an angle produces distortion and makes co-ordination of the two images received by the eye difficult. It would seem better for children, especially, to have the screen at eye level.
4. Some discretion should be used as to the time spent in viewing television, and it should not be persisted in beyond the point of fatigue or boredom.
5. Daylight screens are considered better than ordinary ones because they are compatible with more light in the room, thus reducing contrast between the screen and surrounding objects.
6. Although television per se does not produce eye strain, it requires all the important components of the visual act. People with defects in convergence, accommodation, fusion, and refraction may suffer ocular discomforts sooner than others.

Acute Emergencies of the Eye

Ira A. Abrahamson, Jr., M.D., of Cincinnati, Ohio, said in 1954 that although the list of acute emergencies of the eye is numerous, there are four which are most commonly encountered by the medical profession. These acute emergencies are foreign bodies in the eye, contusion of the eye, chemical burns of the eye, and laceration of the eyelids and surrounding tissues.

A large variety of foreign bodies in the eye may cause damage, such as steel, glass, cinder, wood, eyelashes, or rust from an unremoved foreign body.

The most common cause of contusion of the eye is a blow to that organ by a fist, door, or hammer, or some comparable object. Pain in the eye and possible decrease of vision are complained of by the injured patient. An ice compress may be applied to such a damaged eye for ten minutes at a time, four times a day for the first two days. Treatment beyond this point depends upon the physician's judgment.

Chemical burns of the eye may be of either the acid or alkali type and may result from the splashing of brake fluid, lye, and other substances. Pain, sensitivity to light, burning, and loss of vision are encountered. Whenever possible the patient's head should be placed under a water faucet or into a bucket of water immediately. The time for irrigation of the eye tissues is a very important factor.

Laceration of the eyelids and surrounding tissues may result from a razor, knife, hatchet, human bite, and other common causes. Pain and bleeding are

the chief complaints. Such injuries should be referred immediately to an ophthalmologist for plastic surgery and other treatment.

The four foregoing common acute emergencies of the eye all demand medical treatment. Whether or not they require the services of an eye specialist rests upon the physician's judgment. Whenever there is doubt it is advised that a sterile patch should be applied to the eye and the patient referred at once to an ophthalmologist.

Athletes with Defective Vision

In response to an inquiry regarding severe eye defects and disqualification of high school athletes, two physicians have pointed out in the *Journal of the American Medical Association* that reasonable caution would seem to suggest that a boy who has lost the vision of one eye should not play football. The resulting loss of peripheral vision and depth perception would be a considerable handicap and would increase the probability of further injury. The possibility of injury to, or loss of, the other eye must be given primary consideration.

A plastic face protector attaching to the headgear is now available, but it provides no guarantee against eye injury. It affords some protection against blows, but small objects can penetrate the opening that permits clear vision.

The final decision about athletic participation should be made by the parents in consultation with the family physician after careful weighing of the foregoing factors against the boy's wish to participate. The modern outlook toward the handicapped is to encourage as near normal activity as possible, but there are less hazardous sports to which such a youth can turn.

For boys with decreased vision in both eyes the problem is somewhat different. Since there is no face guard that can make the wearing of glasses in football safe, the most satisfactory solution lies in the use of contact lenses where these are practical and can be tolerated. The use of contact lenses by college and professional players is becoming fairly common. For high school players, however, the cost is often prohibitive.

Generally speaking it is foolhardy for a person with one eye to engage in contact sports. It is true that the possibility of injury or damage to the remaining eye is extremely remote, but with the possibility present, it is foolish to expose oneself to the chance of total blindness.

In persons in whom vision is less than normal without correction and in whom no organic eye disease exists, there may be no reason to restrict participation in sports. A surprising number of outstanding football players have less than normal vision, usually because of simple nearsightedness.

Chapter VI

Speech and Hearing

Studies show that approximately 5 percent of the children in schools in the United States have some hearing impairment. In addition, there are approximately 20,000 children in special schools for the deaf. It has been stated that this incidence of hearing impairment in young children constitutes a national problem and that there is a need for education of the general public about hearing and hearing impairment as well as for the detection, treatment, follow-up, special education, and rehabilitation of those with hearing defects. The Joint Committee on Health Problems in Education has stressed that the early detection of defective hearing is one of the functions of the classroom teacher. This Committee has made various important recommendations for the conservation of hearing in school children.

In Connecticut a study shows that it costs about \$15.24 to discover a hard-of-hearing child in the first three grades. The estimated cost of finding a hard-of-hearing child before he enters school was \$40.91. The cost of repeating a grade in an elementary school in Connecticut was estimated at the time of this study at \$163.58. Since many of the children who are hard of hearing may be saved from failure in school, it is obvious that the detection of the hard-of-hearing child, with correction and improvement of his educability, is an economical action from the standpoint of school expenses.

It is reported that in California more than 80 percent of the children with hearing defects who are seen at diagnostic clinics have received recommendations for medical or surgical care.

A study involving a comparison of three different types of screening for hearing losses of school children indicates that no one of the three screening procedures was able to select all of the children with hearing defects. It was found in this study, which involved 2,404 pupils, that pure-tone techniques were significantly better than the group fading-numbers test for the detection of hearing disorders. Of two pure-tone techniques, the sweep check was the better case finder, but it required more than twice as much time to perform.

In Michigan, more than one million school children have been screened for hearing losses over a ten-year period. It was found that 3 percent of all the children tested required medical attention for hearing losses and that 2 percent needed classroom adjustment to compensate for their hearing losses. Of the children who obtained medical attention it was found that 70 percent improved in their hearing. Approximately 1 percent were found to be in need of special instruction in lip reading or needed assignment to a room for the hard-of-hearing, or direction to a special school for children handicapped in hearing.

In a Wisconsin study it was found that in 71 percent of the cases in which medical recommendations were followed for the improvement of hearing, improvement did occur, whereas in 66 percent of those who did not follow recommendations, the hearing was unchanged or worse. Secondary removal of the adenoids and inflation of the eustachian tube were the types of recommendations most frequently neglected or ignored by parents. It was also found that a good many failures to carry out recommendations were due to the fact that parents had not been convinced of the benefits to be gained.

It has been stated that the most significant development in speech and hearing in Tennessee was the organization of the Tennessee Hearing and Speech Foundation in 1949. This Foundation, a nonprofit organization, was first sponsored by the Tennessee State Medical Association but is now supported by more than forty public and private agencies and organizations. The Foundation has six speech and hearing clinical centers operating or in the process of organization at various points throughout the state. A study in six counties by the Public Health Department which involved approximately 15,000 children has shown that approximately 9 percent had speech defects and approximately 14 percent had hearing disorders. A combination of case finding methods, however, has shown that only about 1 percent of the pupils have major speech defects and that only from 1 to 3 percent have major hearing defects.

In Oregon, during a three-year hearing survey, it was found that 62 percent of the parents who were invited to watch the hearing tests of their children actually came to the schools for this purpose. It was found furthermore that 78 percent of these parents took their children to physicians for correction of hearing defects compared to only 46 percent of the parents who did not come for the hearing testing of their children. It was found that 58 percent of the pupils who saw physicians improved significantly in their hearing, compared to 28 percent of the pupils who showed improvement when no physician was consulted. Of the group that did not receive medical attention, approximately 20 percent later developed deafness whereas only 8 percent of the group that obtained proper health attention developed later deafness. The Oregon experience shows that from 3 to 5 percent of all the children tested for hearing deficiencies will have some hearing disorder.

In a Maryland study it was shown that when medical recommendation resulted in the removal of tonsils and adenoids in children with defective hearing, 69 percent showed improvement in hearing. In a similar group of children, where the recommended surgery was not carried out, there was only 33 percent improvement. Hearing became worse in approximately 3 percent of the children after surgery in contrast to approximately 21 percent in those who declined surgical correction. Of children with impaired hearing who were treated with radium, approximately 54 percent showed improvement.

In Connecticut a state law requires that school children have their hear-

ing tested once every three years. Comparable laws exist in most of the other states.

It is reported that during the past ten years there has been a vast improvement in the education of the hard-of-hearing child in Arizona. In the Phoenix area there is an excellent preschool for the deaf child which is reported as being one of two such schools west of the Mississippi. The Arizona State School for the deaf and blind, located at Tucson, is available for children with auditory handicaps which impair their normal progress in the public schools. About 25 percent of the graduates of this school attend college.

Various types of hearing losses have been discussed and interpreted in the medical literature.

Complexities of speech reading, sometimes called lip reading, have been described. A study of 510 patients from an Army Hearing Rehabilitation Service in respect to the relationship of hearing loss to psychiatric disability indicates that about 5 percent of a group with handicapped hearing will react to their condition by denying any hearing loss, by overcompensating, withdrawing from association with others, or experiencing various other forms of neurotic behavior. About 3 percent of the group in this study welcomed their hearing loss in part. Nearly 6 percent of the total group developed a loss in hearing because of a psychogenic disorder. Following confirmation of the emotional nature of the hearing loss by use of the galvanic skin resistance and other tests, effective cures were obtained by psychiatric treatment, including the use of sodium pentothal. It appears from this study that there is no single "psychology of deafness" but that people react in various ways to defend themselves against a hearing loss. Studies with children at the Johns Hopkins Medical School reveal that many behavior problems in children disappear when hearing is restored to normal.

A study of nonspeaking children has shown that a major characteristic of this group is an intense regression or withdrawal from human contacts. In such a group there is apt to be an indifference to other persons and a marked inability or unwillingness to make new contacts.

A study of 71 children at the University of Illinois Hospitals has shown that the use of the electroencephalograph during sleep may have definite value in the diagnosis of hearing loss and speech defects in young children. Evidence of brain disorder was found in 19 of 53 children in whom a severe hearing loss was established in the clinic. Similar evidence was found in 9 out of 18 children who had slight to moderate hearing impairment but who also showed delayed, distorted, or unintelligible speech. The possibility of disturbed brain control in the interpretation of sound must be considered as a factor in deafness of the so-called congenitally deaf child. Disturbed brain control also appears to be a possible factor in delayed, absent, or unintelligible speech in the young child.

It has been estimated that one in every thousand children in the United

States is born with a cleft palate. According to experts there is no need for the child with a cleft palate to face anything but a full and normal life if corrective measures are taken.

A defect of speech is a mental, social, and economic handicap which often results in embarrassments and disturbances in family, industrial, and public life. Obviously, whatever can be done to detect and correct speech disorders may result in substantial benefits for the individual.

89 **Teamwork in the Prevention of Hearing Impairment**

William G. Hardy, Ph.D., of Johns Hopkins University, said in 1951 that the incidence of hearing impairment of young children is a national problem and, in view of grave consequences to growth and development, a vitally important one.

Approximately 5 percent of school age children have some hearing impairment according to Dr. Hardy. This figure does not include children suffering temporary effects on hearing from upper respiratory infections.

In 1951 there were approximately twenty thousand children in special schools for the deaf. Many of these children were by no means totally deaf, but they did need special work. Many were not even educationally deaf by present standards but could not be handled in any other way because of the lack of facilities.

A principal need in most communities is that the various agencies, public and private, capable of doing the job learn to improve their capacities to meet the needs of the child. A working program may include something like the following seven steps:

1. Public education or health education about hearing and hearing impairment.
2. Adequate case finding, which involves the use of careful screening techniques for all school age children and for as many preschool children as can be reached.
3. Thorough diagnostic examination.
4. Adequate medical and surgical treatment and thorough follow-up.
5. Audiologic study and consultation, which includes a study of the whole child in terms of behavior related to communications.
6. Special education, either in a special school or in an adjunct to a regular school according to the child's needs.
7. Occasional rehabilitation if and as needed.

90 **Conservation of Hearing in School Children**

The Joint Committee on Health Problems in Education stressed in 1946 that early detection of defective hearing is one of the teacher's functions.

According to this group, the most effective means for reducing the high incidence of hearing defects is through close teacher observation, periodic testing of the hearing of all school pupils, and the medical follow-up of those having defects. The alert teacher is expected to detect functional signs of impaired hearing in children by observing such factors as inattentiveness, excessive noisiness, or inability to repeat accurately things heard. Tests of hearing should be made by a teacher or nurse under general medical supervision.

When a hard-of-hearing child is found, the parents should be notified and arrangements made for referral to the family physician or otologist for treatment.

Children with hearing losses may be classified into three groups: (1) those in need of lip reading, (2) those in need of lip reading and a hearing aid, and (3) those who need individual or institutional instruction.

The committee made the following recommendations:

1. That the program for conservation of the hearing of school children be an integral part of the school health program.
2. That the department of health, the department of education, and the medical society of each state co-operate in formulating a practical, economical, and standardized program for conservation of the hearing of school children.
3. That instruction in the conservation of hearing be included in college courses required for the training of teachers and nurses.
4. That the program in each state be uniformly applied in the public, parochial, and private schools.
5. That schools adopt definite plans for the testing of pupils, for securing the treatment of children with defective hearing, and for special education for those with hearing losses.
6. That audiometers be owned by school districts having a school enrollment of 600 or more, and that the state furnish them for use in the smaller districts with limited budgets.
7. To insure uniformity and accuracy, that only audiometers accepted by the Council on Physical Medicine of the American Medical Association be used, and that only properly trained persons make the tests.
8. That schools educate children to avoid colds and other respiratory infections and to give proper care to the ears.

It was pointed out by the committee that schools may secure information on hearing problems from the following sources:

1. The American Society for the Hard-of-Hearing with offices at 1537 Thirty-fifth Street, N.W., Washington 7, D.C.
2. The American Speech Correction Association, Terre Haute, Indiana.
3. The American Academy of Ophthalmology and Otolaryngology, 100 First Avenue Building, Rochester, Minnesota.
4. The American Medical Association Council on Physical Medicine, Hy-

geia, and the Bureau of Health Education, all at 535 North Dearborn Street, Chicago 10, Illinois.

5. International Council for Exceptional Children, a department of the National Education Association, 1201 Sixteenth Street, N.W., Washington, D.C.

91

Cost of Finding the Hard-of-Hearing Child

Florence A. Browne, M.D., of the Bureau of Maternal and Child Hygiene of Connecticut, reported in 1950 that the program in Connecticut schools for finding the hard-of-hearing child was being carried on at a total annual cost of \$3,441 at that time.

For this amount, 6,413 hearing tests were performed. In terms of unit cost, the sweep check amounted to 26 cents each, whereas the unit cost of the continuous test came to 94 cents.

The computations in terms of estimated costs of finding a hard-of-hearing child in the first three grades amounted to \$15.24 for each of 112 children found at this grade level. The estimated cost of finding a hard-of-hearing preschool child was \$40.91.

Many of the children found were thereby prevented from failure in school, repetition in grades, necessity for special education, and the psychological damage which these experiences sometimes cause. The cost of repeating a grade in an elementary school in Connecticut was estimated at that time as \$163.58. The cost of special education was \$363.58 per child per year.

It was thus evident that the detection of a hard-of-hearing child, with correction and improvement of the educability of the child, was an economical thing to do from the standpoint of school expenses.

92

A Total Hearing Conservation Program

Donald R. Caziarc, hearing conservation specialist of the California State Department of Public Health, said in 1950 that there were approximately 1,500,000 to 3,000,000 children of school age in the nation with defective hearing.

Before any state, county, or city attempts to establish a hearing conservation program, it is essential that all interested agencies, community groups, representatives of the local medical profession, and departments of health and education meet together to discuss the purposes and objectives of the program.

The first objective of any hearing program is to locate all the children who may need special education or medical services related to hearing impairment. The most widely used screening method for this purpose has been with the four-type speech phonograph audiometer. Those who use the four-type audiometer should never lose sight of the fact that it is a test of the "conventional speech range" and not a diagnostic audiometric test of hearing.

Another method of screening, developed in recent years, is the "sweep-frequency" pure-tone screening test. This test is administered individually and enables the audiometrist to determine rapidly an individual's hearing acuity throughout an audiometric range from 128 through 8,192 cycles per second. This range of hearing extends well above and below the accepted conversational speech range.

The Massachusetts Department of Public Health has developed a testing technique called the Massachusetts Hearing Test, incorporating the use of the pure-tone audiometer coupled with group audiometer receivers.

It is estimated that between 25 and 50 percent of children with losses of hearing above 2,048 cycles per second are missed when tested with the phonograph-type audiometer. To alleviate these discrepancies, teacher and nurse observations of the child's behavior, his speech patterns, school achievement, and other conditions which might indicate a possible hearing loss are of inestimable value to the audiometrist.

Of primary importance are the preventive aspects of the program. When one studies large groups of hard-of-hearing people, he soon learns that nearly 50 percent of those individuals who are hard of hearing would not be handicapped if the conditions which caused their hearing loss had been determined in early childhood. According to leading otologists, approximately 75 percent of the children whose hearing deviates from the established normal threshold of acuity can benefit from a program of medical or surgical care.

Not all children with defective hearing have difficulty hearing conversational speech. Care must therefore be taken when explaining a test result to the parent or to the teacher.

More than 80 percent of the children with hearing defects seen at diagnostic clinics in California have received recommendations for medical or surgical care.

Teachers should be given special instructions with regard to helping the hard-of-hearing child in the classroom. Special instructions should also be given the parents so that they may help the child at home. Lip reading and speech and auditory training for those children who are more severely handicapped should be made available.

Counselors and teachers also should be aware of the handicap of deafness and of the socioeconomic implications of deafness in order that they can advise and direct the child with defective hearing into avenues of gainful employment.

93 *Three Screening Methods for Detection of Hearing Loss*

Yankauer, Geyer, and Chase reported a study in 1954 involving a comparison of three different types of screening for hearing losses of school children.

Most workers in the field of audiology have stated for some time that individual pure-tone sweep check screening identifies more children with hearing loss for speech perception, as well as for tones above speech range, than group voice testing with fading numbers.

This study consisted of a comparative evaluation of screening for hearing loss by the individual sweep check, the "old" Massachusetts hearing test, and the group voice fading-numbers test. Nine public schools in Rochester, New York, were selected for the study. The study group was composed of 2,404 pupils. The screening procedures, diagnostic tests, and otologic appraisals were carried out within a period of two to three weeks for each of the nine school groups. The tests were performed in classrooms or other schoolrooms selected for low noise levels.

All of the 2,404 children received three screening tests: group phonograph, group pure-tone, and individual sweep check.

As a result of this screening combination it was found that 118 children, or approximately 5 percent of the total group, had a verified hearing loss.

No one of the three screening procedures was able to select all of the 118 children with hearing defects. The group phonograph screening procedure detected 33 percent of the hard-of-hearing children, the group pure-tone screening test found 69 percent of those with hearing losses, and the individual sweep check screening found 95 percent of the children with hearing losses.

All of the children with verified hearing loss were seen by an otologist.

Educational recommendations, varying from preferred seating arrangements to speech reading instructions, were the joint decision of otologist and audiologist. Of the 118 children with verified hearing loss, medical or educational recommendations were made in 64 percent of the cases. In the remaining children the verified hearing loss was of such a nature as not to require medical or educational attention at the time of examination.

Although the individual sweep check was the best case finder of the three screening procedures, it selected more children with no hearing loss than any of the other two tests. This overselection, however, was not significantly in excess of the number of children overselected by either of the group tests.

It was found in this study that pure-tone techniques were significantly better screening devices than the group fading-numbers test. Of the two pure-tone techniques, the sweep check was the better case finder, but it required more than twice as much time to perform.

The Michigan Department of Health reported in 1952 that for ten years it had been co-operating with local health departments, schools, and community agencies in planning and carrying on programs to detect and correct hearing losses in school children.

Programs for this purpose were organized in twenty-five counties during 1952.

More than 1,000,000 school children in Michigan were screened for hearing losses over the ten-year period. Over 70 percent of the children found to have hearing losses and who obtained medical attention improved in their hearing. Half of the group who got this medical attention were restored to normal hearing. As a consequence of this program, thousands of Michigan school children have had their hearing improved as a result of the screening test and medical attention.

It was found that 3 percent of all the children tested required medical attention for hearing losses and that 2 percent will need classroom adjustment to compensate for their hearing losses. One percent will need special instruction in lip reading or will need to be assigned to a room for the hard-of-hearing, or should be sent to a special school for children handicapped in hearing.

95

The Wisconsin Hearing Program

Maxine Bennett, M.D., of Madison, Wisconsin, reports that the hearing conservation program in that state was started in 1947.

To measure the results of the hearing program, ninety-seven school children were selected in two Wisconsin communities for special study.

In both communities recommendations had been carried out in about 44 percent of the cases. It was found that in 71 percent of the cases in which recommendations were followed, an improvement in hearing had occurred, and in 66 percent of those who did not follow the recommendations, the hearing was unchanged or worse.

Thirty-five recommendations for tonsillectomy and adenoidectomy were made, but only fifteen had been carried out. Eleven recommendations had been made for inflation of the eustachian tube but only three children had received this treatment. Recommendations had been made for seven children to have more complete studies and evaluation, but of these only two had seen a physician.

Secondary removal of the adenoids and inflation of the eustachian tube were the types of recommendations most frequently neglected or ignored.

The fact that the majority of hearing tests were given in the winter months when upper respiratory infections were prevalent may have accounted for those cases which showed a hearing loss at the time of the original examination but showed normal hearing at the second examination.

Although it was concluded from this study that improvement in hearing cannot always be credited to the patient's having received the recommended treatment, when obvious abnormalities exist in the ears, nose, or throat and a hearing loss is present every effort should be made to correct the adverse

conditions. It was also concluded in this study that children who had chronic pus forming infections of the middle ear had a primary danger of extension into the brain, since 80 percent of brain abscesses appear to originate from the ear tissues. In such cases the loss of hearing is of secondary importance.

It was found in this study that a good many failures to carry out the recommendations were due to the fact that parents had not been convinced of the benefits to be gained.

96 *Speech and Hearing Defects in Tennessee School Children*

According to Robert M. Foote, M.D., of the Tennessee Department of Public Health, the most significant development in speech and hearing in Tennessee was the organization of the Tennessee Hearing and Speech Foundation in 1949. This foundation, a nonprofit organization, was first sponsored by the Tennessee State Medical Association and is now supported by more than forty public and private agencies and organizations.

The foundation has six Speech and Hearing Clinical Centers operating or in process of organization, located throughout the state.

Two legislative acts in 1951 redefined a crippled child so as to include speech and hearing defects, and appropriated \$120,000 annually to the State Department of Public Health for the crippled children's service.

A state-wide program has been developed, the first phase of which is that of case finding. This is being accomplished through highly qualified speech and hearing field consultants who test children in all areas of the state.

Three different case finding methods were used. A mass survey was made in six counties by Public Health Department speech and hearing consultants. This group tested approximately 15,000 children and found that approximately 9 percent of them had speech defects and approximately 14 percent had hearing defects.

A second case finding method was used in which regular teachers were furnished with a symptom sheet that gave clues to a hearing loss or a speech deviation. Teachers used these sheets as a guide and referred all children they suspected of having a hearing loss or speech defect. The group of referred children was then screened by public health consultants. In excess of 46,000 children were examined by this method. Nearly 3 percent were found to have speech defects and 2 percent were found to have hearing defects.

A third case finding method was used which consisted of a request to regular schoolteachers to refer for testing any children whom they suspected of having either a speech or hearing defect. These teachers did not have a guide sheet to follow. The referrals were then screened and retested by public health consultants. By this method 3 percent of the children were found to have speech defects and approximately 2 percent were found to have hearing defects. Schoolteachers appeared to be just as efficient in finding children

with speech or hearing defects whether or not they had a guide sheet to follow.

By a combination of these three case finding methods, about 1 percent of the pupils were found to have major speech defects and from 1 to 3 percent had major hearing defects.

97

Parents at Hearing Tests of School Children

Warren H. Gardner, Ph.D., consultant in hearing and vision for the Oregon State Board of Health, reported in 1943 that during a three-year hearing survey in which 88,963 hearing tests and retests were given in 30 Oregon counties 62 percent of the parents invited to watch the hearing tests of their children came to the schools. It was found that 78 percent of the parents who came to the school interviews took their children to physicians for correction of hearing defects, compared to 46 percent of the parents who did not come to the interviews.

It was found that 58 percent of the pupils who saw physicians improved significantly in their hearing, compared with 28 percent of the pupils who did not see physicians. There were 20 percent who developed later deafness in the group of children who did not receive medical attention, compared to 8 percent for the group that obtained proper health attention.

The importance of parent education in respect to the hearing problems of children was well apparent from this study.

98

The Oregon Program for Conservation of Hearing

Rebecca Overstreet, Senior Audiometrist of the Oregon State Board of Health, reported in 1946 that over 1,000 pupils with defective hearing were being found each year in Oregon schools. This represented about 3 to 5 percent of all the children tested for hearing deficiencies. Of the cases that received medical care 50 to 60 percent showed improvement in hearing.

The school testing program in Oregon at that time was as follows: The technician gave a screening test with the 4A audiometer. This is the group test in which the stimulus sounds are spoken numbers which are played from a disc on a phonograph audiometer. Forty children were usually tested at one time by this test. However, first and second graders were tested in groups of six or eight by the monitor method, in which the older students wrote down numbers whispered to them by the first or second grade pupils. A recheck was given immediately to those pupils failing in the first test. Third graders were retested by the monitor method.

A pure-tone or 6B audiometer test was given at a later date to those failing the group test. The screening test of air conduction was given, and if this indicated that the child was defective, a threshold acuity test was given. An audiogram was made of the child's hearing, and if he had a 14 percent loss

in the voice range frequencies in either ear or a 25 percent loss in the high tones in either ear, the child's case was marked for referral. If the loss was not that great, the case was marked for deferral and rechecked the following year to determine if there had been any change and if there was need for medical attention. All of the defective hearing cases were retested the following year. If the child still had defective hearing the case was again referred for immediate medical attention.

Following the pure-tone test, a brief medical inspection of deficient pupils was given by the County Health Officer or an assigned local physician after which a nurse-parent conference was arranged. At that time the nurse presented the findings of the test and the medical examination. Every effort was made to persuade the parent to obtain proper medical treatment for his child.

The facts accumulated by the health department—such as hearing-loss score, teacher's statements, medical inspection, history from parent interview, physician's report of diagnosis and treatment—were used in conference with the public health nurse, principals, and teachers to determine the educational needs of each child. For example, seating, special assistance or coaching, lip reading, and in some cases special education were considered.

99

Hearing Conservation in Maryland Schools

Hayman, Rich, and Stark reported in 1951 that about 70 percent of the children in one Maryland county had been screened for hearing defects by audiometry.

Of 7,000 children tested, 1,018 (14 percent) failed the test; 941 of these were seen in a clinic, and 54 others were referred for examination, mainly through teacher-nurse conferences.

The majority of 995 clinic patients had a mild loss of hearing, but 7.6 percent had a severe or extreme loss when first seen.

Chronic conduction deafness was found in 712 patients (72 percent), nearly all of whom had suffered from previous upper respiratory infections. Partial obstruction of the eustachian tubes by infected tonsils and adenoids was observed in 535 children and by infected adenoids alone in 132 pupils.

Nerve deafness was found in 33 patients; 12 of these also had conduction deafness.

One hundred ninety children had their tonsils and adenoids removed, and 139 children received radium treatment.

In patients from whom tonsils and adenoids were removed, 69 percent showed improvement in hearing. A similar group which did not have this surgery as recommended showed only 33 percent improvement. Hearing became worse in 2.6 percent of patients after surgery in contrast to 20.9 percent in those who declined this operation.

Of those treated with radium, 54 percent showed improvement of hear-

ing. No control group of untreated patients was available for comparison. Such a comparison is still needed.

100

Conservation of Hearing in Connecticut

Florence A. Browne, M.D., reported in 1948 that the number of school children in the United States with an appreciable hearing loss has been variously estimated as 2 to 5 percent.

A state law in Connecticut requires that school children have their hearing tested once every three years, and for some years the state department of education has lent group audiometers to schools for these tests. The group audiometer, which can test as many as forty children at one time, is applicable only to children above the third grade, since it requires ability to write as well as to concentrate. This test is designed merely as a screening device, to be followed by individual tests on children suspected of hearing difficulties. Results of tests on this instrument are sometimes misleading since children may copy from one another.

Some municipalities had already acquired pure-tone audiometers at the time of Dr. Browne's report. These instruments test hearing by use of musical sounds rather than spoken words or numbers. By using these instruments with the "sweep test," school children who are hard of hearing may be detected by the pure-tone audiometer quite as rapidly and more satisfactorily than by the group audiometer. Those children screened by the "sweep test" may then be given a more thorough individual test and their audiograms plotted. An especially trained tester is required for this work, but often such a person combines speech training with this skill.

Some of the recommendations made by Dr. Browne for a better program for the conservation of hearing of school children are as follows:

1. Acquisition of a soundproof trailer properly equipped and manned for giving hearing tests.
2. Consideration by schools and state departments of the group test which has been developed using the pure-tone audiometer. This tests from ten to forty children at a time, and in the hands of a skilled operator can test as many as six hundred children a day without the sacrifice of accuracy.
3. Retainer of a consultative group of otolaryngologists to whom children could be referred, and to whom fees could be paid by the state for medically indigent cases.
4. The establishment of hard-of-hearing clinics.

101

Arizona Program for the Hard-of-Hearing

Joseph M. Kinkade, M.D., of Tucson, Arizona, reported in 1954 that during the previous ten years there had been a vast improvement in the education

of the hard-of-hearing child in Arizona. This change was brought about through the combined efforts of the Arizona State Medical Association, various county medical societies, the State Department of Health, both state and local departments of education, the National Society for Crippled Children and Adults, and the Moose Lodge.

In the Phoenix area there is an excellent preschool for the deaf child which Dr. Kinkade reports is one of two such schools west of the Mississippi. In the Tucson area, consultation service for parents is provided through the Department of Special Education of the Public School System. Periodic audiometric examinations, access to hearing clinics, and various counseling services are available to the hard-of-hearing child in various cities in Arizona. These children may also have the services of child psychologists and mental health clinics as well as training in speech therapy.

The Arizona State School for the Deaf and Blind, located in Tucson, is available for children with auditory handicaps which impair their normal progress in the public schools. The school has a staff of seventy-two persons and an enrollment of over one hundred twenty-five hard-of-hearing children, as well as others who are visually handicapped. The school offers both academic and vocational courses, plus athletic, scouting, club, and social programs. About 25 percent of the graduates of this school attend college.

Language development, speech, and speech reading are emphasized along with training in the use of residual hearing.

102

The Use of Residual Hearing

A. C. Furstenberg, M.D., of Ann Arbor, Michigan, said in 1946 that for many years deafness has been recognized as an exceedingly important public health problem in this country, yet the prevention and amelioration of this affliction has been productive of tangible results only within recent years.

Physicians recognize one form of impaired hearing, more frequently observed in children than in adults, which is due to an anomaly of pressure within the middle ears brought about by a blocking of the eustachian tubes, which pass from the throat to the ears. Here, the important factor is usually a mass of lymphoid tissue (adenoids) in the nasopharynx, encroaching on the openings of the eustachian tubes.

The treatment of this condition is often simple. The adenoids are removed, care being taken to dispose of the lymphoid tissue about the openings of the eustachian tubes. There is frequently a rapid return of normal hearing. Unfortunately, however, all patients afflicted in this manner do not respond in such a satisfactory way; or if improvement in the hearing does occur, it is occasionally followed by a gradual recession which becomes more ominous as the child grows older.

Physicians are now equipped with a means of producing an atrophy and

retrogression of lymphoid tissue by the application of radium. It is important to emphasize that radiant energy which is properly utilized not only produces an atrophy of lymphoid tissue about the orifices of the eustachian tubes but acts in a similar manner on lymphoid tissue within the tubes themselves.

Today there is widespread interest in the surgical treatment of another type of hearing impairment to which reference must be made, namely, otosclerosis. This disease is characterized by the production of new bone about the oval window and the consequent ankylosis of the foot plate of the stapes so that sound is no longer adequately transmitted. In the clinic at the University of Michigan, approximately 10 percent of the patients with hearing loss have been found to have this type of disorder.

The third type of auditory impairment, the common one in adults, is the so-called perceptive or nerve deafness. It represents a degenerative process in the nerves of hearing which, in many instances, is due to some severe toxic invasion of the internal ear or which seems to reflect hereditary influence in a certain proportion of patients. The vast majority of adult patients who come to the clinic on account of impaired hearing present this type of auditory disturbance.

The clinical picture is well known to all otologists; a progressive hearing impairment, frequently associated with ringing noises in the ear, negative objective observations, and reduced hearing in the high tones. It is futile to treat these patients by removing their tonsils, operating on their nose, or inflating their eustachian tubes.

A hearing aid cannot be prescribed in the same manner as can eyeglasses. The power to interpret sounds conveyed through a hearing aid often requires weeks or months of diligent effort and study on the part of the patient. He cannot adjust himself to one of these instruments in two or three days. He must learn a new language, and this can be acquired only by a long period of tireless effort and adjustment. There are more hearing aids in bureau drawers than in active use by the hard-of-hearing. In most instances, this circumstance is the result of the patient's ignorance of the necessity of training his brain to interpret new impulses, in short, the necessity of learning a new language.

Miriam D. Pauls, Harriet L. Haskins, and William G. Hardy, of the United States Navy, pointed out in 1946 that speech reading (sometimes called lip reading) is a complex process. Every conversational situation includes many factors beyond the speech reader's control. Moreover, the conversation may be complicated by poor speech, poor lighting, and general

confusion, with the result that even the most expert speech reader is at a disadvantage.

Ideas presented must be grasped in a fleeting instant. Only about a third of speech movements are visible and the whole process is an ever-changing continuum. To these variables must be added the facts that no two mouths are alike, nor are there two people who talk in the same way.

In lip reading, patients are taught to feel, hear, and see simultaneously. They are taught to recognize some of the cues that are associated with a typical speech situation: gestures, facial expression, objects handled or referred to, the place and the personality of the speaker.

In the program of hearing and speech rehabilitation at the United States Naval Hospital in Philadelphia at the time of this report, the lip reading patient had 20 basic lessons of an hour's duration, each supplemented by special classes to provide additional practice. Instruction was given in small groups of five to eight patients. Each classroom was equipped with a small, sound-treated, well-lighted booth with a large glass partition that separated it from the rest of the room. This device provided valuable silent practice in which no auditory cues could be heard, and demonstrated that the student can follow a conversation without actually hearing the spoken words.

The speaker sat in the booth and talked in a normal conversational voice without exaggeration or distortion of the speech pattern. Characteristic gestures and facial expressions were freely employed.

After four weeks of training a proficiency test was given to each patient. The results of this test were used to plan further training for the patient.

Each lesson was organized around a central theme. This gave unity and point to the lesson and was an aid to the student in that he knew to some extent what to anticipate. In the basic series, everyday experiences determined the selected topics and were constructed around the hospital, a restaurant, a bank, shopping, and so on. Topics selected for the more advanced groups depended upon special interests.

Skits were acted out by members of the group in order to develop power of observation as well as to train the class to follow rapid dialogue. Other practice situations such as well-acted movie scenes were also used.

At the time of this report 2,787 men had been given training in this Aural Rehabilitation Unit.

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Emotional Aspects of Hearing Loss

Peter Hobard Knapp, M.D., of the Psychiatric Department of the Harvard Medical School, reported in 1948 concerning a study of 510 patients from an Army Hearing Rehabilitation Service in respect to the relationship of hearing loss to psychiatric disability.

Various psychological relationships to loss of hearing were revealed. About 5 percent of the group reacted to their condition by denying any hearing loss, overcompensating, withdrawing from association with others, or experiencing various other forms of neurotic behavior. About 3 percent of the group welcomed their hearing loss in part. Nearly 6 percent of the total group developed a loss in hearing *because* of a psychogenic disorder. Following confirmation of the emotional nature of the hearing loss by use of the galvanic skin resistance and other tests, effective cures were obtained by psychiatric treatment, including the use of sodium pentothal.

It appeared from this study that there was no single "psychology of deafness" but that people react in various ways to defend themselves against a hearing loss. On the other hand, it was evident that in some cases deafness is psychological in origin and must be treated by the psychiatric approach.

105***Behavior Problems in the Hard-of-Hearing***

Donald F. Proctor, M.D., of Johns Hopkins Medical School, said in 1949 that many behavior problems in children disappear when hearing is restored to normal.

Impaired hearing is caused, in 80 percent of the children, by diseases of the ears, nose, and throat which are amenable to treatment.

In February 1943 a clinic for the prevention of deafness in children was opened in Hagerstown, Maryland.

Specialists in the clinic frequently see a child who has been considered for years to be inattentive, difficult, bad, or just plain "dumb," but who actually has simply been the victim of a moderate or fluctuating hearing impairment. The personality change in such a child, when the hearing returns to normal, is wonderful to see.

106***Nonspeaking Children***

Lydia Jackson, of London, reported in 1950 on a study of nine children in whom the principal symptom was the inability to speak. The inhibition of speech was so severe that the children were thought to be defective or psychotic. A major characteristic of these nine children was an intense regression or withdrawal from human contacts. A common finding was an indifference to other persons and a marked inability or unwillingness to make new contacts.

Most of the children were also intensely active, as if all the energy withdrawn from human contacts was being expended on manipulating things in a most persistent and vigorous manner. In two children who were inactive, tenseness and rigidity showed that a powerful urge to activity was present but was resisted with remarkable strength.

Under psychiatric treatment, regression of the children was arrested and reversed. The children now became able to participate in learning, to make things, to play constructively, and to enter into relationships with other children and adults, instead of following haphazard or compulsive activities. The children appeared to be in much better possession of themselves after treatment than before.

Co-operation of the parents appeared to be the most important factor in the children's recovery.

107***Disturbed Brain Control and Speech Defects***

Richard E. Marcus, M.D., of Chicago, reported in 1951 on a study of 71 children at the speech and hearing clinic of the Illinois Eye and Ear Infirmary at the University of Illinois Hospitals.

In this investigation the electroencephalograph was used during sleep in an attempt to determine whether or not there were brain responses to indicate that hearing was taking place.

It was found that 28 of the 71 children studied had abnormal electroencephalograms. Many of the children with hearing loss showed other signs of abnormalities, including disorders of gait, slowed development, behavior disturbances, and muscular imbalance of the eyes.

It was found that electroencephalography in sleep was valuable in the diagnosis of hearing loss and speech defects in these young children. Evidence of brain disorder was found in 19 of 53 children in whom a severe hearing loss was established in the clinic. Similar evidence was found in 9 out of 18 children who had slight to moderate hearing impairment and who also presented delayed, distorted, or unintelligible speech.

The possibility of disturbed brain control in the interpretation of sound must be a factor in deafness of the so-called congenitally deaf child. Disturbed brain control thus appears to be a possible factor in delayed, absent, or unintelligible speech in the young child.

108***Cleft Palate and Other Speech Defects***

At the fifth annual speech correction and guidance conference sponsored by the Palo Alto (California) city school system in April 1949 various speakers discussed speech conditions which can be partly or wholly corrected.

There is no need for the child with a cleft palate to be regarded by his parents as abnormal or to face anything but a full and normal life, according to Dr. Albert D. Davis, surgeon and lecturer at Stanford Hospital in San Francisco.

It has been estimated that one in every thousand children in the United States is born with a cleft palate. The cause for the defect is not known and

"it is no respecter of race, color, class or creed." There is no reason to suppose that it is accompanied by mental deficiency.

Mrs. Dorothy Molyneaux, audiologist for the Hearing Center in San Francisco, discussed comparative studies made by her of children with normal speech and those with speech defects.

Studies indicated that children with good speech had been read to a great deal by their parents, had a wide and early acquaintance with nursery rhymes, and were taken frequently to zoos or circuses and on similar conversation-stimulating excursions.

The children with poor speech did not have a history of such activities and had not been encouraged in the early, or babbling, stage of speech.

A survey sampling made in recent years of the estimated need for speech correction among school children indicated that only 25 percent of such guidance was being provided.

Before speech training for the cleft-palate child can begin, consultation with a surgeon is necessary. Postoperative therapy is aimed at the development of the muscles of the soft palate, increasing of movement and control of the tongue and lips, and improvement of the child's attitude toward his defect.

It was estimated at this conference that about one percent of the total population stutters. It was pointed out that teachers should avoid placing such a child in difficult speech situations, should refer the child to a professional correctionist if possible, and try to build up the child's confidence in himself by giving him responsibility and encouraging him to recite when ready.

109

Hygiene of the Voice

An editorial in the *Journal of the American Medical Association* pointed out in 1947 that a defect of speech is a mental, social, and economic handicap, which often results in embarrassments and disturbances in family, industrial, and public life. Many scientists are convinced that the factors involved in speech difficulties are primarily mental or emotional.

Functional impediments to speech, such as chronic hoarseness and voice weakness, may be due to phobias resulting in over- or underactivity of the vocal apparatus. Overuse produces the impression of strain, underuse an impression of flabbiness.

Froeschels found that 93 percent of the preschool children in Vienna had hoarse voices. He examined the voices of 1,000 school children while they were speaking and while they were reading. The few who did not show straining of the voice during speaking showed it during reading. The slight emotion produced by the difficulties which reading offers a child seems to be one of the reasons for the sudden increase in hyperfunction.

Froeschels has described an original method of treating functional dis-

turbances of voice which he designates as the chewing method. The idea is based on the observation that one can chew, speak, and even sing at the same time. Long observation convinced Froeschels that chewing was the origin of human speech.

Many people when chewing with the mouth open have the tongue continually on the floor of the mouth but that, according to Froeschels, is not the way savages chew; they lift and drop the tip of the tongue. Only the original method of chewing guarantees the setting free of the voice.

The patient is advised to chew with voice production at least twenty times a day for a few seconds only, but should always avoid doing so mechanically. He should act with the guiding idea of having some food in his mouth. After a few days he should read several times a day for one or two minutes only but should begin with a voiced "nonsense" chewing, and should always, after having read some words, introduce another "nonsense" chewing.

Dr. Chevalier Jackson notes that one of the pitfalls in the treatment of voice weakness is the belief that some different system of vocal training or some special exercises will cure the overworked muscles. He feels that absolute rest is necessary before any new system of training is undertaken so that the muscles may recover from the damage previously done. His plan includes a period of absolute silence at least half as long as the duration of the strenuous use of the voice; next, omission of any use of the voice on days when there is especially strenuous vocal work; he recommends absolute silence on the week end and elimination of all attempts to talk against noise. Any necessary use of the telephone is to be done with a low voice and with the telephone transmitter held close to the lips. Especially dangerous is an attempt by singers or public speakers to extend the range of pitch upward.

More study is needed on both the hygiene of the voice and the techniques desirable to strengthen and prolong its function.

Chapter VII

Dental Health in Schools

It is said that a sound school dental health program consists of several aspects such as classroom instruction, dental examinations, follow-through, treatment, and evaluation.

In New York City the greatest emphasis in the dental health program in schools is placed upon dental health education which is a co-operative enterprise between the departments of health and education. Teachers are responsible for teaching dental hygiene, for referring children to dentists, for some follow-up work, and for keeping a dental record of each child. The dental hygienists are responsible for clinical duties, consultation, specialized teaching, inspection, follow-up, parent interview, home visits, record keeping, and the making of an annual summary. The New York Department of Health operates 139 dental clinics to provide dental care for those children whose parents are unable to afford the cost of dental treatment.

In Florida studies have revealed that about 35 percent of the elementary school population in need of dental treatment is unable to pay the cost of this service. The Maplewood Health Department of New Jersey reports on the experience of that community in handling a small number of dentally indigent school children without the overhead costs of a full-scale dental clinic. The plan was developed by the Maplewood Health Department, the Board of Education, and the local dental society.

In Woonsocket, Rhode Island, an extensive school dental service program has been designed to supply complete dental services, except orthodontics, to all school children enrolled in kindergarten through the ninth grade of the public and parochial schools, provided the treatment is requested by a parent or guardian.

In the development of this dental health program clinics were prepared in twenty-four of the city's twenty-seven schools. The size of the clinics has varied from two to seven dental chairs. Complete dental examinations of all children have been made in each school.

In Massachusetts the Dental Association expressed opposition to a proposed bill in the state legislature that would have permitted restorative work on children's teeth by persons specially trained in a two-year course. The dental society expressed the opinion that the treatment of dental decay and other oral conditions cannot be entrusted to any other person than a fully qualified registered dentist.

In Askov, Minnesota, a ten-year dental demonstration was begun in 1947. The demonstration was established to determine the value of total, or community, dental care for children and to determine methods by which dental

health education could be correlated with the school curriculum. The town of Askov has no community water supply so it cannot benefit from the central fluoridation of water, but the application of sodium fluoride to the teeth by local dentists is an important part of the program. In the elementary schools two supervised toothbrush drills are held daily and an effort is made to create favorable mouth hygiene habits at home for the preschool and secondary school students. Under school supervision the elementary school children brush their teeth when they first come to school in the morning and then immediately after lunch. An effort is also being made to improve the diet and to reduce the consumption of sweets and excessive carbohydrates. By 1952 the age group from three to five years had shown a 41 percent reduction in dental caries. A smaller reduction has been revealed in the permanent teeth of the six- to twelve-year age group.

In Michigan a study of school children, brought out in areas where a comparison can be made between the effects of nonfluoride- and fluoride-bearing water supplies, shows that the presence of fluorides in the drinking water may be a protection against dental decay. Such research has been reported from many different sections of the country. A report in 1953 on fluoridation of the public water supplies in Grand Rapids, Michigan, shows that after six and one-half years of fluoridation there has been a reduction of dental decay in the permanent teeth of the children in this city amounting to approximately 67 percent in six-year-old children and to 18 percent in the sixteen-year age group. Similar reductions have not been observed in Muskegon, Michigan, where the water supply has remained free of fluorides.

Numerous studies have been made on school children to discover ways of improving dental health. One study in Springfield, Illinois, shows that tooth brushing and the application of fluorides result in substantially reduced levels of dental decay. Research in Aurora and Peoria suggests that there is some value to both ordinary tooth brushing and brushing with an ammoniated dentifrice, as well as rinsing with an ammoniated mouth rinse in respect to the reduction of dental decay. In Glasgow, Scotland, studies with sixty children tend to confirm the value of an ammoniated dentifrice.

The problem of dental injuries in football has been studied and been found to be a serious one. The use of mouth protectors has greatly reduced dental injuries at the high school level.

It appears from the national evidence that many schools are carrying on a multiplicity of dental health activities and that such programs are expanding.

It is reported that dental education of a well-organized professional nature has developed almost entirely in the past century. Currently there are forty-three dental schools in the United States and a new dental school is being organized at West Virginia University. It is reported that the most serious problems in dental education today are the deficiency of adequate financial support and the lack of broad dental research programs.

School Dental Health

Perry J. Sandell says that a sound school dental health program, as a part of the total health program, consists of several aspects: (1) classroom instruction, (2) dental examinations, (3) follow-through, (4) treatment, and (5) evaluation.

At all stages in the school there is great need for instruction in oral hygiene, including such subjects as correct toothbrushing techniques, proper diet, cause of dental decay, and the need for regular and supervised dental care. The dental health instruction program should be an integral part of the school curriculum and should be related to the dental examination program, to the follow-through program, and to care and treatment as well.

Every pupil should have a dental examination at least once a year. The advice of the dentist should be followed in regard to more frequent visits.

In order to establish a base line from which progress in dental health can be measured, it is desirable that the following information be available: (1) number of children having DMF (decayed, missing, or filled) teeth, (2) the number having no DMF teeth, (3) the number having d.e.f. primary teeth (decayed, needing extraction, or filled), (4) the number having no d.e.f. teeth, and (5) the number of children having diseased gums, malocclusions, or other dental abnormalities.

Another effective device for evaluating a program is to compare the number of lost permanent teeth over a period of years. A still simpler evaluation procedure is to determine the percentage of children who have returned to the school with the dentist's statement that needed corrections have been made.

Dental Health in New York City Schools

Drs. Harry Strusser and Henry C. Sandler stated in 1951 that dental health education is one of the important functions of the Bureau of Dentistry of the New York City Department of Health.

The greatest emphasis in this school program is placed upon dental health education—a co-operative enterprise between the departments of health and education. Teachers are responsible for teaching dental health, for referring children to dentists, for some follow-up work, and for keeping a dental record of each child.

The dental hygienists are responsible for clinical duties, consultation, specialized teaching, including toothbrush drill, inspection, follow-up, parent interview, home visits, record keeping, and making of an annual summary.

The New York experience has demonstrated that a health education program tends to fail unless some provision is made for taking care of those children whose parents are unable to afford the cost of dental care. The Department of Health operates 139 dental clinics to meet this need. The clinic serv-

ice is concentrated on children from kindergarten to the fourth grade, inclusive, when the clinics are located in the schools. When the dental clinic is located in one of the public health centers, the children above the fourth grade and preschool children are served from these facilities.

At the time of this report, school co-operation and interest were reflected by the fact that 97.5 percent of all the schools and 94.7 percent of all the teachers kept and filled out reports, and 90 percent of all children were included in reports on dental health.

Approximately 52 percent of the children had completed the correction of all needed dental services and 13.5 percent were still under treatment. This made a total of 65.5 percent who received, or were receiving, recommended dental care.

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Dental Health in Florida

D. H. Turner, director of the Bureau of Dental Health, Florida State Board of Health, said in 1945 that surveys in that state had revealed that between 80 and 92 percent of the school population were victims of dental disease.

Approximately 20 percent of the elementary school population were able to pay for dental service, against 35 percent definitely unable to pay anything, while 45 percent were in doubt as to ability to pay.

Ten of Florida's sixty-seven counties had no dentists or dental facilities; thirteen of them had only one dentist each; the majority of the dentists were concentrated in the cities—leaving large rural areas virtually unserved by competent dentists in the year 1945.

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Maplewood Dental Plan

The Maplewood Health Department of New Jersey reports on the experience of that community in handling a small number of dentally indigent school children without the overhead costs of a full-scale dental clinic.

The plan was developed by the Maplewood Health Department, the Board of Education, and the local dental society.

In this community the school medical department refers all cases of suspected or alleged dental indigency to the public health nurse, who investigates the family's eligibility for dental care according to a family income scale approved by the New Jersey Dental Society.

Children of eligible families are then referred to any one of sixteen local dentists of their choice, all of whom participate in the plan.

The dentist, after inspection, estimates the work needed and its cost at a stipulated hourly rate. Upon approval of the estimate by the health officer,

the dental work is completed and the dentist is paid from funds provided by the Maplewood Service League, a women's civic organization.

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The Woonsocket Dental Program

Frank E. Law, D.D.S., Carl E. Johnson, D.D.S., and John W. Knutson, D.D.S., D.P.H., report that the Woonsocket, Rhode Island, school dental service program is designed to supply complete dental services, except orthodontics, to all school children enrolled in kindergarten through the ninth grade of the public and parochial schools, provided treatment is requested by a parent or guardian.

In the development of this program dental clinic rooms were selected and prepared, with the necessary plumbing and electrical outlets, in twenty-four of the city's twenty-seven schools (fifteen public, eight parochial, and one orphanage). The size of the clinics varied from two to seven dental chairs, depending upon school enrollment and the space available.

Organization and scheduling are planned to maintain three clinics in operation throughout the school system at one time. When dental treatment is completed in one school, the equipment, supplies, and personnel are transported to the clinic room in another school. The clinic is dismantled, transported, and set up ready for use in the next school in approximately one and a half days.

In a study to evaluate the results of this program the project personnel included four to seven dentists, one or two dental hygienists, eight dental assistants, one follow-up worker, one secretary, and three clerks. The dental hygienists gave prophylaxis and topical fluoride applications. The follow-up worker checked on treatment certificates from patients of private dental practitioners, encouraging these as well as clinic patients to obtain complete treatment. In addition, she transported to a clinic those children needing emergency treatment or children whose treatment had not been completed when the clinic was moved, and she delivered supplies. The secretary cared for the central office and supply room. A clerk was assigned to each clinic to handle records, maintain the flow of patients, and perform related duties as required. An average of one and a half dental assistants for each dentist was on duty in each clinic.

Teachers issued "request for treatment" slips to all pupils with instructions to return them signed by a parent or guardian, indicating whether he wanted the child's dental care provided in the school clinics or in the offices of the family dentist. Care in the school clinics was requested for about 85 to 87 percent of the children enrolled.

Complete dental examinations of all children were made in each school. Once the examinations had been completed, clinical treatment was given to

all children whose parents had signed consent slips. During treatment the children received chairside instruction in oral hygiene.

The types of treatment included:

- Permanent fillings (amalgam and silicate cement)
- X-rays as required during treatment
- Vital partial pulpectomies of permanent and primary teeth
- Root canal therapy of permanent anterior teeth
- Extractions
- Treatment of periodontal diseases
- Prophylaxis
- Topical fluoride applications
- Polishing of fillings

Dental examination and complete dental treatment were given 5,944 children in kindergarten through the ninth grade in the first treatment series and 5,189 children in the second treatment series.

The first treatment series, covering a total of thirty months, was designed to care for the accumulated dental needs of the group, with primary emphasis on care of defects in permanent teeth.

The second treatment series, requiring twenty-four months, was designed to treat the increment of defects occurring between treatment periods and to provide substantially more care for the primary dentition. The proportion of children requiring fillings during the second round was no less than in the initial series. In addition to the increment of defects occurring subsequent to treatment in the first series, about 2,500 children received initial care in the second series.

Only 20 percent of the children had any permanent teeth filled prior to the first series; this figure increased to 58 percent at the start of the second.

Examinations for the second treatment period demonstrated that the average fifteen-year-old had 8.62 filled teeth, compared to only 2.33 at the start of the first series.

In all age groups, 1,778 permanent teeth were extracted in the first series, and only 684 in the second.

There was a reduction of 14 percent in the number of dentist man-hours required to complete the treatment of each child: 3.3 dentist man-hours were required in the first series and 2.8 in the second series.

The Honorable Foster Furcolo, of the House of Representatives, reported in 1950 that the Massachusetts Dentists' Committee, which at that time was sponsoring a bill in the state legislature to prohibit nondentists from per-

forming dental operations on children, had conducted a poll which revealed that 2,700 of the state's 2,800 dentists were opposed to the 1949 act which permits hygienists with two years' training to do restorative work on children.

Under authorization of the 1949 act, the Massachusetts Department of Public Health was supervising a five-year program at the Forsyth Dental Clinic in Boston, where hygienists were being given two-year courses and then authorized to do the work which was formerly entrusted only to a registered dentist.

It was the opinion of the American Dental Association that restoration work on children's teeth cannot be entrusted to any person other than a fully qualified registered dentist. It was also the association's opinion that two-year courses do not prepare trainees or hygienists for such highly specialized work.

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Dental Education in Askov, Minnesota

William A. Jordan reported in 1950 that the need for a better program of dental health education was shown the year previous by a study conducted in schools throughout Minnesota which revealed that the amount spent for candy bars and soft drinks in the schools of that state during a single year came to \$770,000. This figure was well in excess of the \$175,000 spent annually for the entire state dental health program.

As a result of this study it was decided to conduct a ten-year dental demonstration in Askov, Minnesota, based upon the assumption that to prevent dental decay one must reduce the intake of carbohydrates (excessive sweets and starches), prevent the growth of acid-forming bacteria in the mouth, neutralize acids that may be found in the mouth, and increase the resistance of the enamel to the action of acids.

The Askov program is centered around the following practices: two supervised toothbrush drills daily for the elementary school children and the creation of favorable mouth hygiene habits at home for preschool and secondary school students.

Under school supervision the elementary school children brush their teeth when they first come to school in the morning and then immediately after lunch. Each child from three to seventeen years of age in the community receives toothbrushes and tooth powder.

Another feature of the program is the application of sodium fluoride to the teeth by local dentists and a community-wide health education program centering upon the care of the teeth. An effort is also being made to improve the diet by reduction of sweets and excessive carbohydrates.

The program is being conducted under the auspices of the Minnesota State Dental Association, the United States Children's Bureau, the Minnesota Department of Health, the schools, and the community in general.

The Askov Dental Demonstration

William A. Jordan, D.D.S., of Minneapolis, reports on the ten-year demonstration study being made in Askov, Minnesota, on the value of a community approach to the improvement of dental health.

Askov is a small Danish farming community located in the northeastern section of Minnesota. There is no resident dentist in the community. In 1947, at the request of the dentists of a near-by town and of the people of Askov, the dental personnel of the Minnesota Department of Health surveyed the children of the Askov school. An unusually high rate of decayed, missing, and filled teeth was found among these children.

The Askov Dental Demonstration was established to determine the value of total, or community, dental care over a ten-year period for children of the age groups involved, especially for those entering the program at the age of three years. The demonstration also sought to determine methods by which dental health education could be correlated with the classroom curriculum, as well as other information.

The town of Askov has no community water supply so it cannot benefit from the central fluoridation of water. However, the comparable application of fluoride to the erupted teeth is an important part of the ten-year demonstration.

At present the three-to-five-year age group has shown a 41 percent reduction in dental caries. A smaller reduction has been revealed in the permanent teeth of the six-to-twelve-year age group. This group was found to have 10 percent more individuals free of dental decay at the end of three years than at the beginning of the demonstration program. No significant reduction is apparent in the thirteen-to-seventeen-year age group at present.

The use of the bite-wing X-ray as a routine part of the dental examination has been demonstrated. Without such X-rays the dentist missed 24 percent of the decaying surfaces.

The use of the lactobacillus count has proved a valuable means of promoting dental health education among the parents as well as among the children. The program has increased the percentage of children in the low count from 27 percent in 1948 to 48.9 percent in 1950. In other words, currently nearly half of the children have a low lactobacillus count.

Group diet control has met with partial success. This phase of the program has presented problems that as yet have not been solved. The toothbrush drill in the school has proved another aid to dental health education. Carrying on a proper brushing technique at the proper times appears to be a means of teaching good oral hygiene. According to the cost of the first three years, the combined preventive features, including examination, fluoride treatment, lactobacillus counts, controlled diet, toothbrushes, and dentifrice, averaged about ten dollars per child per year. Eighty-five percent of the eligible children are participating in the dental care phase of the program.

The attitude and interest of the parents in regard to the program are excellent. A survey of 173 families showed that the people desired to finance their own dental needs. Dr. Jordan concludes that at the end of its first three years, the ten-year study is already demonstrating benefits to be derived from a community dental health program.

118 *A Dental Study of School Children in Michigan*

C. Ray Taylor, D.D.S., of the Michigan Department of Health, said in 1946 that many Michigan water supplies had been found, through routine fluorine analyses, to contain from 0.1 to 1.8 ppm (parts per million) of fluorine. Studies in other states have shown there is a marked difference in the prevalence of dental caries in school populations in communities using non-fluoride and fluoride-bearing water supplies. The purpose of this study was to compare the dental conditions in children from two groups of communities: (1) with water supplies containing no fluorine, (2) with water supplies containing 0.0 to 0.1 ppm fluorine.

A total of 866 white school children varying from four to eighteen years of age were selected because of their continuous residence. Four hundred and fifty-six were from nonfluoride and 410 from fluoride areas.

The DMF per child (a total of all decayed, missing, and filled permanent teeth) was figured on the 351 children with permanent teeth in fluoride areas and 433 children in nonfluoride areas. The average DMF per child was 5.71 in nonfluoride areas and 2.21 in fluoride areas. The percentage of children with permanent teeth having had no decayed, missing, or filled teeth was 13.4 in nonfluoride and 38.7 in fluoride areas.

Dr. Taylor concluded that it was apparent from this study that fluorides in the drinking water may be a protection against dental decay.

119 *Fluoridated Public Water Supplies Reduce Dental Decay in Michigan School Children*

Arnold, Dean, and Knutson report that after six and a half years of fluoridation of the public water supplies in Grand Rapids, Michigan, there has been a reduction in dental decay in the permanent teeth of the children in this city amounting to approximately 67 percent in six-year-old children to 18 percent in the sixteen-year age group. Similar results have been obtained regarding the deciduous teeth.

Similar reductions have not been observed in Muskegon where the water supply remained free of fluorides.

A reduction in the number of missing teeth was also observed in Grand Rapids.

A comparison of the 1951 dental decay rate in Grand Rapids with those of Aurora, Illinois, shows that in so far as can be determined to date, the use of fluoridated water gives the same beneficial effects as does the use of a natural fluoride water of similar concentration.

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Dentists Oppose Massachusetts Experiment

The Honorable Foster Furcolo, of the House of Representatives, called attention in 1950 to the fact that Health Commissioner Vlado A. Getting's precedent-breaking program in Massachusetts, permitting nonregistered dentists to perform dental operations on children, had been sharply rebuked by the American Dental Association.

The American Dental Association went on record in a San Francisco conference as being opposed to the Massachusetts federal-financed training program, authorizing two-year trainees to perform dental restorative work on children. The program was originally identified as a research project.

The association did not object to the type of research in the Getting program, but according to Dr. Richard D. Cunningham, chairman of a Massachusetts dental committee working for repeal of the program, it did object to the five-year program, financed through the Federal Security Agency with \$250,000, whereby female hygienists were being given two years' training and then permitted to perform on children highly specialized dental work which should be entrusted to a registered dentist with eight years of qualifying training.

121

Tooth Brushing and the Application of Fluorides

John E. Chrietberg, D.D.S., of Springfield, Illinois, gave an account in 1951 of a study of 750 children who were divided into three groups comparable in number, age, and economic status, to determine if supervised tooth brushing could be substituted for the cleansing or quick prophylaxis which is recommended before the first application of sodium fluoride by the dentist.

It has been well established that a 2 percent solution of sodium fluoride, applied directly to the permanent teeth of children after the teeth are cleaned by the dentist, will produce a reduction of about 40 percent or more in dental decay.

In this study it was shown that after two weeks of supervised toothbrushing by the children prior to the direct application of the sodium fluoride, basically the same results could be achieved as when the dentist cleaned the teeth.

Over a one-year period, reductions up to 47 percent in dental decay were noted, as compared with the control group.

122

The Value of an Ammoniated Dentifrice

Douglas W. Kerr, D.D.S., and Robert G. Kesel, D.D.S., of Chicago, reported in 1951 a two-year study of 288 children in Aurora and 1,428 in Peoria concerning the effectiveness of different methods of controlling dental decay.

The children were divided into four groups: those who did no brushing of the teeth in school, and the three other groups who brushed their teeth in school—one using ordinary tooth paste, another an ammoniated dentifrice without bentonite, and the last an ammoniated dentifrice with bentonite.

The teeth were brushed by the three groups participating in this part of the study at 9:00 A.M. and 1:00 P.M., the closest possible time following the intake of food. Brushing was done under close supervision each school day, and the children were urged to brush their teeth in the same way, at home, after the evening meal and before retiring. Clinical examinations were made on the children's teeth throughout the two-year period.

The results showed that the most effective protection in terms of reduction of dental decay was achieved when an ammoniated dentifrice was used. Approximately 17 to 20 percent greater protection was achieved as compared with the control group.

Next most effective was the use of an ammoniated dentifrice with bentonite, where approximately 10 percent improvement in tooth decay was noted. Brushing with an ordinary dentifrice achieved 6 percent greater protection than when there was no brushing in school.

This study appears to give some support to the value of both ordinary toothbrushing and brushing with an ammoniated dentifrice, as well as rinsing with an ammoniated mouth rinse.

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Values of an Ammoniated Dentifrice

James A. Gale, chief dental officer of Glasgow, Scotland, made an interim report in 1951 on a two-year investigation of the value of an ammoniated dentifrice in the reduction of dental decay. Dr. Gale had selected sixty children from six schools for this study. Thirty of the children were being supplied with an ammoniated tooth powder, and the other thirty children, the control group, were being allowed to use any other type of dentifrice of their choice.

The test was commenced with children all under three years of age—roughly of the same social and economic strata.

After one year it appeared that the total number of dental cavities had increased in the control group at a ratio of greater than two to one as compared to the group using the ammoniated dentifrice.

Although certain other factors must be taken into account in interpreting results, a preliminary conclusion suggesting the value of an ammoniated dentifrice seemed justified according to Dr. Gale.

124 *Fluorine and Dental Decay in Montrose, Colorado*

Robert A. Downs, D.D.S., and Frederick S. McKay, D.D.S., of Colorado, related in 1946 a study which was brought about by repeated reports from Montrose that the dental caries rate was extremely high in that Colorado town despite reports that indicated the city water supply contained 1.4 ppm of fluorine. Our present-day knowledge has amply demonstrated that a high dental caries rate and 1.4 ppm of fluorine in the water supply of any community do not exist together. Therefore, the situation in Montrose demanded investigation.

A total of 406 high school pupils were examined, of which only seventy-seven were found to be natives of the community proper. These seventy-seven native individuals showed an average of 10-plus decayed areas per person, and only one was found to be entirely free from dental caries.

Other pupils were observed who presented typical examples of dental fluorosis, none of whom had been born or reared in the city of Montrose.

There was a total of sixty-seven such individuals. These sixty-seven fluorosed individuals showed an average of only 1.7 carious areas per person, and twenty-seven students were entirely free from dental caries.

The dental condition of this group as regards tooth decay is seen to be in startling contrast to that of the Montrose natives previously described.

The only conclusion that could be reached from this study was that the report which gave the fluorine content of the city water as 1.4 ppm fluorine was in error. This was established through a later analysis which revealed that the correct fluorine content was 0.3 ppm.

125 *Dental Injuries in Football*

Jack F. Cathcart, D.D.S., of Berkeley, California, reports that a survey of football injuries in sixty-two colleges, which was made in 1950 under the auspices of the University of Missouri, showed that dental injuries ranked first in college football mishaps, with 733 teeth being chipped or knocked out from the mouths of 4,000 athletes participating in football for a single season. These injuries occurred mostly to players of experience who were familiar with the hazards of the game.

About 1949 Dr. Cathcart, a dentist of twenty-seven years' experience, made casts of the mouths of a group of high school football players and then prepared mouth protectors which he donated to the athletes of Berkeley High School in California.

He and Fred Moffett, the football coach, used these custom-made mouth protectors for a period of two years.

During this two-year period of trial only one injury in the facial area occurred and this was to a player who was not wearing one of the mouth protectors. In the excitement of entering the game as a substitute, this boy left his

mouth protector on the bench and had two front teeth knocked out, thus spoiling a 100 per cent injury prevention record.

Encouraged by the results of this experiment, Dr. Cathcart made further studies and then devised a master-cast design for the development of mouth protectors at a mass production rate. This made the product available at a minimum cost to any boy playing contact sports. These mouth protectors are now being manufactured and distributed by a major sporting goods corporation (Voit) and are catalogued for sale by all major sporting goods distributors.

Two additional years of testing with mouth protectors have been completed at Berkeley High School. During this time no tooth, lip, jaw, or concussion type of injury has occurred from football among athletes using the mouth protectors.

The design enables the wearer to breathe with his mouth open and call signals or talk.

A South San Francisco high school coach whose team used the new mouth protectors in 1952 stated that it was the first year in the history of football at his school that the players had gone through a complete season without a dental injury.

During the football season prior to this report the football players at twenty-three California schools where this type of protection was used went through the season without a single dental injury. Other schools of the state presented dental injury claims to the California Interscholastic Federation, the insuring agency for most of the high schools in the state, that amounted to some \$8,000.

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Dental Education

Lloyd E. Blanch, chief for education in the health professions of the Office of Education, Washington, D.C., reports that dental education today is beset with numerous problems.

Dental education of a well-organized professional nature has developed almost entirely in the past century although dentistry existed in all the ancient civilizations. Even as late as 1900 only about three-fifths of the dentists in the United States had been trained in dental schools.

Currently there are forty-three dental schools in this country. A new dental school is being organized at West Virginia University. There is only one independent dental school in the United States, as all others have been absorbed by the universities.

In 1953 there were 93,726 dentists in the United States, a ratio of approximately one dentist to each 1,677 persons in the population. In October of this same year there were 12,516 undergraduates and 4,463 graduates and post-graduate students enrolled in dental schools.

The first dental school in the world was established in 1840 as the Baltimore College of Dental Surgery.

The most serious problems in dental education today are the deficiency of adequate financial support and the lack of broad dental research programs. Problems also exist in respect to physical facilities, teaching methods, curriculum construction, and a shortage of competent dental teachers. Relationships with medical schools could also be improved.

Chapter VIII

The Handicapped Child

By 1951 some thirty-six states and the Territory of Hawaii had permissive or mandatory legislation providing financial subsidies to local school districts for the education of physically handicapped children. Three additional states had a more limited type of support for education of such children.

It has been reported by competent statisticians that in 1948 in the United States about 400,000 children and young people under the age of twenty-one years were more or less seriously handicapped by orthopedic impairments. This was the number actually recorded in state registers of crippled children. Under the age of five years, clubfoot appears to be the major cause of orthopedic impairment. The relative importance of this condition declines with age, however, with injuries and infections accounting for a greater proportion of crippled children in each successive age. Poliomyelitis is reported as leading every other orthopedic impairment in frequency beginning with the school-aged child.

The Iowa program for crippled children features a hospital school as one aspect of a three-part program. The oldest hospital school in the country was founded in 1904 just south of Boston, Massachusetts. This hospital school combines in one institution expert medical and surgical care and a complete educational, vocational, and rehabilitation program for children of normal mentality with orthopedic defects between the ages of three and twenty-one years.

The Spalding School for the Handicapped in Chicago, Illinois, is reported as being the only institution of its kind in the world. Here children from the nursery through high school are educated and cared for both physically and mentally, in a school built and equipped especially for them. In this school, children report to the treatment center, pools, and rest rooms as a regular part of their educational program. Only pupils registered by medical authorities are accepted at the school.

A study conducted in Ledyard, Connecticut, suggests that about 4 percent of a school population may be found to have rheumatic conditions. It is to be expected that variations would be encountered in the frequency of rheumatic fever in various communities throughout the United States.

School adjustments for children with heart disease have been reported on the basis of experience in the Philadelphia schools. In Denver, Colorado, special attention has been given to the detection of rheumatic fever and cardiac conditions among the public school children. During the first four years of its operation, the Denver Rheumatic Fever Diagnostic Service examined 3,235 children who were referred for investigation. Even in this carefully selected

group of children only about 22 percent were shown to have rheumatic or congenital heart disease. The prevalence for the entire school population, of course, was much lower. A special heart survey of 3,645 entering students at the University of Colorado showed that normal hearts were found in approximately 97 percent of the students. Although heart murmurs were found in approximately 14 percent of the students, they were judged to be physiological in most cases rather than representing true heart disease.

In Philadelphia it was found that 140 diabetic children attended Philadelphia schools in 1944 out of a total enrollment of about 340,000 pupils. The Board of Education of the City of New York instituted special procedures in 1947 for the discovery of children with diabetes.

In New York City the Department of Health serves as an agency for securing changes in the regular school routines for children with physical defects and handicaps. Adjustments are made by adaptations in regular classes, by the provision of special classes, and by home teaching. These three adaptations of the school program can be prescribed by any physician who advocates a modified school program for any of his child patients.

Attention is called to the psychological effect of certain minor physical defects, such as that of protruding ears. The ridicule that children may encounter when they are afflicted with such minor deviations from normal probably justifies surgical correction of the condition.

The Executone has been used in Iowa for about fifteen years to provide home instruction for disabled or shut-in pupils. A survey of medical opinion in Iowa regarding use of the Executone has shown 100 percent satisfaction with this method of instruction for children unable to attend school.

It should be noted that children with defects of vision, hearing, mentality, nutrition, and other conditions must likewise be considered as handicapped children. Problems associated with such conditions are discussed in separate chapters of this sourcebook.

Arthur S. Hill, chief of the Section on Exceptional Children and Youth of the Office of Education, reported that, as of October 1951, thirty-six states and the Territory of Hawaii had permissive or mandatory legislation providing financial subsidies to local school districts for the education of physically handicapped children. Three additional states had a more limited type of support for education of handicapped children.

A number of states had increased their appropriations and types of services for physically handicapped children. The most pronounced increase for special education services has been in the field of the mentally retarded. In 1949 only eighteen states encouraged, by legislation and subsidy, the education of

mentally retarded children, but by 1951 there were thirty-two states and the Territory of Hawaii giving such support to the program.

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Crippling Defects

According to statisticians of the Metropolitan Life Insurance Company, there were in 1948 about 400,000 children and young people under twenty-one in the United States who were more or less seriously handicapped by orthopedic impairments. This was the number recorded in state registers of crippled children.

The relative frequency of various orthopedic impairments varies from age to age. Congenital defects and birth injuries are responsible for the majority of orthopedic handicaps in the early years of life—more than three-fifths of the total at ages under five. Acquired defects, on the other hand, are numerically the more important at the older ages.

Clubfoot is the major cause of impairment at ages under five years, and is responsible for 22 percent of the total at those ages. Its relative importance, however, declines with age, and it accounts for only 4 percent of the impaired at age twenty. Injuries, in contrast, account for 3 percent of all impairments among preschool children, but for about 13 percent among young people by the age of twenty-one years. Similarly, each of the infections, especially osteomyelitis, tuberculosis, and arthritis, accounts for a greater proportion of crippled children in each successive age period. Poliomyelitis leads every other orthopedic impairment in frequency beginning with the school age.

The rate of crippling conditions per 10,000 persons is given in the following table for individuals under the age of twenty-one years.

Cause	Prevalence Rate per 10,000
Poliomyelitis	13.9
Cerebral palsy	7.4
Injury	6.3
Clubfoot	6.2
Bone infections	3.5
Rickets	3.0
Scoliosis	2.3
Tuberculosis of bones and joints	1.8
Paralysis due to birth injury (exclusive of cerebral palsy) .	1.7

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Iowa Program for Crippled Children

Raymond R. Rembolt, M.D., of Iowa City, reported in 1952 that Iowa has an active crippled children's program. It consists of three major parts, centering in (1) the college and university hospitals, (2) the Crippled Children's Program, and (3) the Iowa Hospital School.

The program consists of locating crippled children, offering diagnostic service by means of field clinics, providing for more detailed and diagnostic services in the university and children's hospitals, accomplishing long-term rehabilitation in the hospital school, and supplying a follow-up program of care.

The number of children seen during 1951 under this service was 2,679.

A special feature of this service is the Iowa Hospital School. The school was established by act of the Iowa General Assembly in 1947. The purpose was to create a facility for the treatment and education of physically handicapped children who could not attend school because of severe physical limitations but who were capable of being educated under proper conditions.

130***The Massachusetts Hospital School***

Margaret R. Brayton, principal of the Massachusetts Hospital School, said in 1952 that this school was founded in 1904 just south of Boston.

The hospital school combines in one institution expert medical and surgical care and a complete educational, vocational, and rehabilitation program for orthopedically handicapped children of normal mentality between the ages of three and twenty-one years.

The school curriculum includes nursing school and kindergarten, and grades one through twelve. In the junior and senior years of high school, pupils may specialize in a commercial course, or in a general course, or in a vocational program.

The infirmary is a complete hospital with facilities for surgery, nursing care, and physical and occupational therapy. Doctors in orthopedics, physical therapists, occupational therapists, and teachers of crippled children are trained here. A resident staff of four physicians and surgeons is supplemented by a consulting staff of more than thirty medical men who carry out a very active program for rehabilitation of each child. Complete laboratory, X-ray, and dental services are provided.

As of 1952, the Massachusetts Hospital School could care for 150 children. The object of the school is to make every student an independent self-supporting citizen with a proper attitude toward life.

131***Spalding School for the Handicapped***

Celestine Igoe, director of the Spalding School, Chicago, Illinois, stated in 1945 that this institution was the only school of its kind in the world. Here, children from the nursery through high school are educated and cared for both physically and mentally, in a school built and equipped especially for them. There was, in 1945, no other especially constructed and equipped high

school for the handicapped in the United States comparable to this unique institution.

Children report to the treatment center, pools, and rest rooms as a regular part of their program. Regular hours for treatment are assigned when the hours for academic work are determined. Treatment must always take precedence over other work, even though it may mean spending more time in a grade of school.

Usually toward the end of a semester, a counselor interviews each graduating senior at Spalding and analyzes his medical records. After vocational advice the student is sent to interview an employer who has a job that might be filled by the handicapped student. The employer indicates on a card whether or not he has hired the applicant, and the salary to be received. If the employer does not hire the applicant, the reason for not accepting the individual is noted.

All pupils registered at Spalding are there at the request of medical authorities. It is to these same authorities that the children are returned at intervals for consultation and treatment. For the most part, these visits are supervised by the school.

Teachers at Spalding School are selected from the same lists as are all regularly assigned teachers in the Chicago Public Schools.

Special teachers are appointed for the sight-saving, deaf-oral, and slow-learning pupils; but these pupils must be physically handicapped as well as in need of the special training to which reference is made before being enrolled at Spalding.

The Spalding School enrollment in March 1945 according to diagnosis was as follows:

Cardiacs	483
Spastics	222
Poliomyelitis	148
Tuberculosis	62
Congenital deformities	34
Medical	27
Osteomyelitis	24
Muscular dystrophy	21
Congenital dislocation	18
Spinal bifida	16
Scoliosis	14
Fractures	12
Amputations	11
Arthritis	10
Slipped epiphysis	10
Miscellaneous	102
Total	1,214

Rheumatic Fever in School Children

Amy Breyer, M.D., reported in 1945 on a study of 196 school children in Ledyard, Connecticut, who were examined for evidence of rheumatic fever or associated heart disorders.

Eight, or 4 percent of the total of 196 school children examined, were found to have rheumatic conditions. In addition to the eight there were two children who were ill at home with acute rheumatic fever. Another eight children had possible heart disease, thus increasing the total to 9 percent. It is of interest that in no preschool child was a definite diagnosis of rheumatic heart disease made and in only one was there a suggestive murmur.

It should be emphasized that this survey did not represent a complete health examination of school children; the purpose was to determine the prevalence of rheumatic heart disease and incidentally to stimulate interest in the value of school health examinations.

School Adjustments for Children with Heart Disease

Jacob M. Cahan, M.D., reported that in Philadelphia in 1951 one or more of the following special privileges could be prescribed for a pupil with heart disease, depending on his needs:

1. Attendance at a more convenient school because of a heart condition which requires:

- a) Better transportation
- b) Less traveling distance
- c) Elevator facility
- d) A classroom on a lower floor

2. Free carfare tokens or free bus fare.

3. Special pass to permit the use of special school entrance or exit.

4. Permission to enter or leave school before or after the regular time scheduled for other children, to avoid a congested hallway.

5. Permission to trail at the end of the line, walk without regard to movement of classmates, or rest on the stairs if necessary.

6. The use of an elevator, if there is one in the building.

7. Permission to use a toilet on the floor nearest to the classroom.

8. Excuse for any lateness or absence.

9. Avoidance of acting as messenger.

10. Avoidance of Safety Patrol duty.

11. Avoidance of disciplinary measures if the pupil is nervous.

12. If possible, permission to remain in the classroom during recess and lunch, or lengthening of the lunch hour to avoid haste.

13. Permission to retire from the classroom for a rest period when necessary.

14. Avoidance of standing during class recitation.
15. Avoidance of homework.
16. Permission to attend only one school session.
17. Excuse from calisthenics and physical education for restriction of physical activities.
18. Special provision for safety during a fire drill or atomic bomb drill.
19. Assignment of a visiting home teacher.
20. Any other privilege or health guidance, such as advice on educational progress in school or college, vocational needs, and avocational wishes.

134***Heart Disease in Denver Schools***

Mildred Doster, M.D., assistant director of the Health Service Department in the Denver Public Schools, said in 1951 that the Rheumatic Fever Diagnostic Service in that city was a valuable community clearinghouse for all suspected cases of heart disease in children.

During the first four years of its operation, 3,235 children were referred to the Denver Rheumatic Fever Diagnostic Service; 16.2 percent were verified as having rheumatic heart disease and 6.2 percent proved to have congenital heart defects. A small group was considered to have potential rheumatic heart disease and is being carefully watched.

Even in this carefully selected group of children with heart murmurs or evidences of the rheumatic state, 67.3 percent had no heart disease.

In Denver, during 1951, special schooling for cardiacs was given by visiting teachers to five home-bound pupils and by the Boettcher School for handicapped children to about sixty pupils who could engage in a limited program. The other known cardiac or rheumatic fever patients, about four hundred of them, were able to attend regular schools, although some had special schedules to fit their needs.

All of these pupils were counseled to have as regular and normal a living regime as they could tolerate. Most of the restrictions on children with minimal heart disease only deny them happiness. Only a few of those in regular schools were ever excluded from physical education and a few more from competitive sports.

135***Heart Disease in University Students***

Drs. Shearer, Sikkema, and Holden have reported on the results of the special heart survey of 3,645 entering students at the University of Colorado.

Physical examination with special attention to cardiac history and further clinical study with the fluoroscope and electrocardiogram were used in the evaluation of the heart status of the students.

Normal hearts were found in 96.5 percent of the students. Organic heart

disease was present in 1.2 percent, congenital heart disease in 0.5 percent, and rheumatic heart disease in 0.7 percent of these students.

Heart murmurs were found in 13.5 percent of the students but these were judged to be physiological in most cases and not because of true heart disease. On the other hand, most of the students who were found to have heart disease did have murmurs also.

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The Diabetic Child at School

Walter S. Cornell, M.D., stated in 1944 that approximately 140 diabetic children attended Philadelphia schools in that year out of a total enrollment of about 340,000 pupils.

Not all of the diabetic school children were known to their teachers or to the school physicians. The mothers of the younger children usually notified the teachers of the situation, and some of the high school pupils similarly informed the teachers or the school physician at the time of the annual examination. In the high school age there was an inclination on the part of some diabetic pupils to conceal their condition on the ground that it was nobody's business, the condition was under control, and if known would possibly cause restrictions in student activities which the student wished to pursue.

The question arose: Should the routine school medical examination go beyond the limited physical examination to include a urinalysis? In Philadelphia the cost appeared to be prohibitive, as an additional \$75,000 would have been added to the cost of the medical examination. This would have revealed the identity of 105 diabetic pupils at a cost of more than \$700 per revelation. But actually more than one half of these children would have been known already.

It was concluded by school medical authorities in Philadelphia that the parent of each child might well be questioned when the child first enrolled in school regarding diabetes or tuberculosis in the family, and those children with positive histories might well have urinalyses or X-ray examinations of the chest at definite intervals through school life.

Insulin reactions may occur to diabetic children, and every diabetic child or his parent should be careful to inform the school principal and the class teacher that the child is taking insulin, that it is possible that some insulin reaction may occur some day, and that the child is to be given sugar in that event.

When a diabetic child's mother asks the child's teacher to give sugar in case of insulin shock, she should give to the teacher a written request to this effect, signed by the attending physician with assurance by the physician that the administration of sugar will not be harmful to the child; furthermore, the mother should write her own request for teacher help when it is needed,

including the statement that the teacher will not incur any legal responsibility by this action.

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School Management of Diabetic Pupils

The Board of Education of the City of New York stated in 1947 that at the beginning of each new term the school principal should obtain the names of all children known to have diabetes and should ascertain these facts from the child's physician or parents: (1) Is the pupil receiving insulin? (2) To what extent should the child engage in vigorous exercises? (Strenuous exercise may suddenly reduce the child's blood sugar, and result in insulin shock.)

It was also pointed out that teachers in charge of diabetic pupils receiving insulin should know that sudden pallor, giddiness, delirium, incoherent speech, cold sweat, faintness, and loss of consciousness are symptoms and signs of insulin shock.

Teachers were advised by the board to be sure that diabetic pupils carry a piece of hard candy or a lump of sugar in their pockets, to be taken immediately when symptoms of insulin shock threaten.

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Pupil Health Adjustments in New York City Schools

The Department of Health in New York City functions as an approving agency for changes in regular school routines for children with physical defects and handicaps. In addition, the department attempts to interpret to teachers and principals the medical recommendations from private and clinic physicians, to observe and follow up the adjustments of children on special school programs, and to keep private and clinic physicians informed regarding these adjustments. In 1942 the schools were prepared to adapt their programs in three different ways:

1. *Adaptations in regular classes* could be made for many orthopedic, cardiac, and under par children without danger to themselves, although some of these children required some modification of the regular class routines such as the following:

- a) Substitution of rest period for physical training programs
- b) Lengthening of the lunch period by fifteen or thirty minutes
- c) Provision of two sets of books, one to be kept at home, thus making it unnecessary for the child to carry books to and from school

2. *Special classes* were of two kinds, the orthopedic class for crippled children and the health improvement class for cardiac and under par children. The old open-air classes no longer functioned as such and were desig-

nated as health improvement classes. In these classes the handicapped children could obtain:

- a) Adjustable chairs and tables for crippled children
- b) More individualized educational projects
- c) Freedom from the competitive drive which obtains in the regular classes
- d) Reclining periods during the school hours
- e) Bus transportation to and from school, if necessary

3. *Home teaching* was provided for children with an I.Q. above 75 if their physical condition permitted and they could not attend school. Home instruction was especially indicated for the severely crippled, the chronically ill, or the convalescent child who was not able to engage in the activities of the school without danger.

These three adaptations of the school program were at the service of the private and clinic physician. He could prescribe them for his patients as readily as he did a medication, a diet, or a home routine for rest.

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The Correction of Protruding Ears

Oscar J. Becker, M.D., of Chicago, pointed out in 1945 that the person with protruding ears is usually the subject of ridicule and therefore very conscious of his deformity. Children are especially apt to be called nicknames like "Dumbo" and "Donkey Ears."

If surgery is to be resorted to, it is advisable to operate on children for a correction of this condition at the age of four or five years, before entrance into school.

Protruding ears are present at birth. The basic cause is the absence of an inner curved ridge of the external ear (antihelix). Surgery of a proper kind gives a permanent correction of the deformity and is based upon the formation of new anatomical structures.

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Executone and Home Study for Disabled Pupils

J. A. Richards, of New York City, reported in 1950 on the use of the Executone equipment which is now being used in some school districts for the education of pupils who cannot attend school.

The equipment consists of a receiver with a transmitter in the classroom, an amplifier in the school building, and a master set for the system in the pupil's home. The schoolroom unit is plugged in at the beginning of the school day and disconnected at the close of the day's program. The pupil controls the set in order to listen to classroom proceedings or for recitation.

In one instance a boy acted as stage manager for a Christmas play, his

job being to coach the children on stage in clear and distinct speech. This he did from the bed in his own home. Another shut-in pupil fed his goldfish at home at the same time the chore was done at school by the other pupils. Another boy who had never seen the inside of a school became president of his class.

This system of home instruction had been in operation in Iowa for over ten years at the time of this report. During this period about one thousand pupils received all or part of their education by operating the convenient listen-talk switch in the apparatus by their bedsides.

For a child to obtain this service, an application should be made through the local telephone company. The cost of approximately \$15 per month, depending on the distance involved, plus a nominal installation charge, is usually paid for by the parent, a welfare society, or the school board, depending on available funds.

Further information may be obtained through the local telephone company or the special education division of Executone, Inc., 415 Lexington Avenue, New York City.

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Executone Evaluated

George R. Ludwig reported in 1954 on a survey conducted by the Division of Special Education to determine medical opinion of the Executone by which "in-class" instruction has been extended to hundreds of home-bound school children.

In the state of Iowa extensive use has been made of this school-to-home telephone equipment with the co-operation of physicians, educators, local telephone authorities, and the Executone Corporation. The handicapped child who is confined to his home is able to hear all of the activities of the classroom and can be called upon to recite, participate in group discussions, and so on.

All educational programs provided for the home or hospital pupil are dependent upon approval by the attending physician.

In this study fifty-two Iowa physicians were surveyed by letter in respect to their opinion of the value of the Executone equipment. Twenty-seven replies were received to the letter of inquiry. The results of this survey are summarized as follows.

One hundred percent of the twenty-seven physicians expressed *satisfaction* with this method of instruction.

Twenty-three letters out of twenty-seven specifically mentioned or strongly implied patient benefits in terms of *morale and psychotherapy*.

The Executone was described as *an aid to recuperation* since it enabled patients to keep up with school work and to avoid forcing themselves into

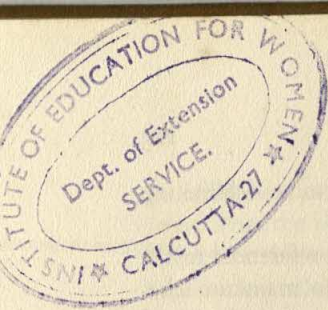
strenuous school situations too soon after recovering from a debilitating illness.

Seventy-five percent of the physicians made unsolicited references to the *educational advantages* of the method. Pupils were able to maintain scholastic standings, to keep up with the class, and to sustain an interest in school work in general.

Wholesome diversion for the home-bound patient was stressed by about 20 percent of the physicians. The problem of "what to do" for a home-bound child has long troubled busy parents. Preoccupation of the child with school activities is an aid to both the patient and his parents.

From other comments made by the physicians it was concluded that *maximum benefits for the child can be expected only if:*

1. The student has sufficient mental age and achievement level (only from the fourth grade or above in Iowa)
2. Seclusion is available for the pupil so he can concentrate
3. The class has an awareness of its responsibilities
4. Regular time schedules are established for teacher visits
5. Close co-operation exists between parents, physician, teacher, and student under alert supervision



Chapter IX

Communicable Disease Control

Although it has been shown clearly that a principal cause of absence from school during the elementary years is the respiratory and children's diseases, schools in general have been withdrawing from mass immunization of pupils. The fact that vital statistics show that the greatest need for immunization is during infancy and the preschool years lends support to the current trend as far as certain communicable diseases are concerned.

The experience in Alameda County, California, suggests that a continuing educational program with parents which emphasizes their responsibility for securing immunization of preschool children may be needed.

A recent court decision in Missouri upholds the right of the Board of Education to require compulsory vaccination for smallpox for admission to school. Obviously such a court decision has force only in those states where no legislation contrary to smallpox vaccination exists.

In Houston, Texas, the Board of Education passed a law, effective September 1, 1946, requiring immunization against diphtheria or a negative Schick test within the twelve-months period before entrance into school as a prerequisite for the admission of all children who were under the age of ten years.

The control of tuberculosis among students and school personnel continues to be an important problem. The certification of schools for tuberculosis control activities has been effective in stimulating schools in some states to an acceptance of greater responsibility along these lines. Minnesota schools have been especially alert in this field, and it is reported that Lincoln County, Minnesota, was the first county in the United States to be awarded a certificate for the control of tuberculosis because of its school and community activities against this disease.

An epidemic of tuberculosis in a New York rural high school was reported in 1952. It was finally concluded that the disease had been introduced into the school by a boy who developed the disorder from exposure to a scout master who died of tuberculosis soon after the diagnosis was made in the first school case.

It is stated that X-ray inspection of the chest is of little value in the examination for tuberculosis among children up to the age of twelve or fourteen years. According to one authority, the tuberculin test is our most potent weapon against tuberculosis in the schools. It is stressed that administrators, teachers, clerical workers, cooks, engineers, janitors, bus drivers, and all others who take any part in the operations of schools, as well as the pupils, should be examined for tuberculosis. Surveys have shown that about 1 per-

cent of classroom teachers have been found to have clinical tuberculosis, although in the past ten years this figure has declined.

In Syracuse, New York, twelve years of tuberculosis case finding among public and parochial high school pupils has revealed slightly less than 1 percent with active tuberculosis although about 6 percent were classified as "suspicious." Calculation of the costs of finding active cases of tuberculosis in Syracuse suggests that the price is relatively low.

In Los Angeles, California, periodic programs of tuberculosis education and case finding have been conducted for a number of years. One important aspect of this program has been the emphasis placed upon fundamental personal habits, cleanliness, adequate rest, and balanced diet as a means to the prevention and control of tuberculosis.

A study conducted in five Illinois high schools shows that when pupils refuse to take the tuberculin test the decision against the procedure is made by parents almost as frequently as by the student himself. Such a finding led to the conclusion that the tuberculosis education program in the schools should be broadened to include more parent education.

It was reported in 1944 that an examination of 16,524 teachers in the Province of Quebec, with the exception of the city of Montreal, showed that approximately 1 percent had tuberculosis. The legislative assembly of Quebec has made it mandatory that teachers produce each year a physician's certificate stating that they are free from tuberculous disease.

Studies of poliomyelitis in schools suggest that when only a single case is recognized during the first five days no secondary cases should be expected. On the other hand, when two or more cases of poliomyelitis develop during the first five days of an outbreak, it is very likely that further spread will occur. In general, the prevalence of poliomyelitis among school boys and girls will correspond to that of the general population. Studies seem to suggest that there is little justification for advising the postponement of the opening of schools because poliomyelitis has been prevalent in a community. In a Tennessee investigation no significant spread of poliomyelitis in two school groups was observed even though it was proved that some of the children were carrying the virus of this disease in their stools either on opening day or shortly thereafter.

The experience in a private school in New York City suggests that school authorities would be wise to take precautions against the spread of mumps within a school population. The prevalence of complications among the children themselves as well as their parents when no effort was made to control the spread of mumps led to the conclusion that control measures were advisable.

A study in the city of Rensselaer, New York, reveals that medical impressions are not always an accurate guide to the immunization status of a child population. In this community the reports from physicians over a five-

year period indicated that only 5 to 13 percent of the preschool children had been immunized against diphtheria, but examination of school health entrance records and a house-to-house survey showed that from 69 to 95 percent had been protected against this disease before entrance into school.

An outbreak of diphtheria in a girls' school has shown the possibility of an epidemic even in a highly immunized population. The wisdom of booster immunization in order to maintain a high level of resistance to diphtheria was made apparent. An epidemic of diphtheria in Medford, Oregon, schools, in which a twelve-year-old boy died of this disease and ten other children developed the disorder in the same school, gives confirming evidence to the need for maintaining active immunization against diphtheria at a high level. The occurrence of nasal diphtheria among a small group of school children in Albany, New York, gives still further evidence of the need for immunization against this disease.

Numerous reports of epidemics of ringworm of the scalp have been made from various cities and communities in the United States within recent years. The use of the Wood light has been found to be indispensable for the detection of unrecognized cases, and for the readmission of students to school after treatment for ringworm of the scalp. Recently the New York City Department of Health has announced that school children with ringworm of the scalp will no longer be excluded from school if they are placed under medical care. It was found in New York City that when children with this disease were rigidly excluded from school, the spread of ringworm of the scalp was not abated. Even when infected children were permitted to attend school, surveys showed no increase in prevalence of the disease. Public health officials in New York City now believe that ringworm of the scalp is spread chiefly in the home. The decision to permit children to attend school was also based upon the observation that ringworm of the scalp is a mild disorder which is ultimately self-curative and without complications.

In Rochester schools during the 1944 and 1945 sessions, infestation with head lice was the second greatest cause of absenteeism. A program of treatment with DDT powder was very effective in reducing the incidence of head lice among pupils of the schools in this city. Effective measures of control have also been reported from other communities.

In a Florida study, 94 children out of a total of 134 in a particular school were found by stool examinations to be positive for hookworm. Other kinds of parasites were present in a small number of the children.

142 Are Mass School Immunization Programs Necessary?

Catherine Baird, M.D., and James Malcolm, M.D., health officers of the Alameda County Health Department in California during 1953, report that

mass immunizations of pupils in school were abandoned in their district in 1948.

The philosophy back of this change of policy was that immunizations would not be limited to a few months every two years and emphasis would not be placed upon immunization of the school age group rather than the infant and preschool group. Parents were urged to obtain immunizations through established private physicians and clinic facilities available continuously throughout the year.

To determine whether parents were obtaining protection for their children during the preschool period, a questionnaire survey of kindergarten and first-grade children was made in May 1949. The results showed that only a fourth of the beginning school children were known to be adequately protected against diphtheria. The question of whether or not there should be a return to mass immunization in the schools was raised.

A plan was developed and approved by the medical society whereby private physicians would give immunizations in their own offices at a special fee of \$1.00 during a three-month period in 1950. Immunizing materials were supplied by the health department. The educational campaign was intensified and parent-teacher associations gave active support to the drive for greater immunization. The educational program to secure immunization was given top priority by the health department during 1951-52. By the close of the 1952 school year an evaluation process was again started. Results showed that the educational program was showing signs of being worth while. Even with higher standards of adequate protection, over three-fourths of the beginning school group were found to have secured adequate protection against diphtheria as compared to less than one-fourth in 1949.

The authors believe that a program that emphasizes parent responsibility to secure up-to-date immunization of youngsters does work.

Compulsory Smallpox Vaccination in Schools

Newell A. George, regional attorney for the Federal Security Agency at Kansas City, Missouri, reports that a recent court decision in Missouri upholds the right of the Board of Education to require compulsory vaccination for smallpox for admission to school.

A lawsuit was filed in January 1952 by the parents of twin daughters. The parents had sought to enroll their daughters at the age of five years in the public school kindergarten classes. Entrance was refused because the parents would not permit their daughters to be vaccinated.

The following year the parents again sought to have their children enrolled in the public school but would not comply with the Board of Educa-

tion regulation that no child should be received in any public school unless he had been vaccinated against smallpox.

The parents filed suit for admission to school on the grounds that the children had not been vaccinated because such vaccination would have impaired their health and that there was neither an actual nor a threatened epidemic of smallpox in the area.

In reaching a decision in the case, the judge reaffirmed a previous ruling in which it was stated that boards of education must determine what regulations are needed for a safe and proper management of the schools and for the physical and moral health of the pupils entrusted to their care, and that if such regulations are not oppressive or arbitrary, the courts should not interfere.

It was further held that the testimony was so overwhelming and statistical information so convincing of the protective value of vaccination that the court held the Board of Education to be within the exercise of sound discretion in adhering to its rule requiring vaccination of children in the school system.

144 *Diphtheria Immunization Required in Houston Schools*

In Houston, Texas, the Board of Education passed a school law, effective September 1, 1946, requiring immunization against diphtheria or a negative Schick test within the twelve-months period before entrance into school, as a prerequisite for admission for all children under the age of ten years.

The law was passed at the request of the local Board of Health.

145 *Schools and Tuberculosis*

The Committee on Tuberculosis, of the American School Health Association, recommended about 1944 that a method be devised whereby individual schools or entire school systems be given certificates for tuberculosis control activities. It was considered preferable for the members of the state subcommittees on tuberculosis to decide upon the standards for their respective states.

The subcommittee for Minnesota adopted the following qualifications for certificates in that state. Requirements are condensed in this abstract and do not include all essential features.

An individual school or an entire school system may be certified as Class "A" when:

1. Ninety-five to 100 percent of the children have been tested every other year with tuberculin of adequate dosage and certain subsequent procedures.
2. All members of personnel of a school or system to be certified have had the tuberculin test administered with the same dosage as for children.

3. All students and members of school personnel who are found to have progressive tuberculosis are removed from school until adequate treatment has been administered and the danger of contagion is remote.

4. An educational program has been required to make sure that the teaching staff understands thoroughly the underlying principles of tuberculosis control.

The Class "B" certificate is awarded under the same rules as for Class "A" recognition when only 80 to 95 percent of the children from kindergarten through high school are tested with tuberculin.

The Class "C" certificate is given in schools where the tuberculin test is not administered but where at least 95 percent of the infected high school students and members of school personnel have X-ray film inspections of the chest.

A Class "D" certificate is awarded in schools which have a regular program for tuberculin testing and X-raying of specified grades and school personnel, but do not comply with the requirements for the other certificates.

146

An Epidemic of Tuberculosis in a High School

Horton, Champlin, Rogers, and Korns reported in 1952 on an epidemic of tuberculosis that occurred in a New York rural high school.

Seventeen cases of tuberculosis occurred, thirteen of which were among a total of 133 students enrolled during a single school year. A twenty-three-year-old teacher was also found to have the disease. Subsequently tuberculosis developed in three more pupils exposed within a three-year period.

Diagnosis of tuberculosis was made through chest X-ray surveys and the isolation of tubercle bacilli from the sputum or gastric contents of all but one person, in whom the spinal fluid was positive for tubercle bacilli.

Three deaths occurred and two patients were still hospitalized at the time of this report. The twelve others had recovered.

Besides the woman teacher, fourteen cases of the disease occurred among girls, while only two occurred among the boys. A boy, however, was the first diagnosed case. In only two families was there any evidence of spread of the disease.

Eight of the sixteen pupils who developed tuberculosis sang in the chorus, but over a two-year period the percentage of students in the chorus who developed a positive tuberculin reaction did not exceed that of students who were not in the chorus. Six of the patients played in the band. The exchange of possibly contaminated mouthpieces of wind instruments was suspected, but study tended to exclude this method of spread. All but two of the patients came to school in the school bus, but only three rode together. All others came by separate bus.

Only one situation was found to be common to all the infected pupils. All were taught by the same teacher. This teacher, however, taught two other classes in which no cases of the disease developed. This is the teacher who developed tuberculosis. It was concluded that she got the disease from one of her pupils.

Most of the pupils ate in the school lunchroom and drank pasteurized milk. Laboratory study of the tubercle bacilli recovered from the sputum and gastric contents of the infected pupils revealed no bovine-type organisms. It was thus concluded that the disease had been spread from human to human, rather than from any infected cattle.

The boy in whom the disease was first diagnosed had cough and expectoration beginning in March, but he remained in school until his graduation on June 23. On June 20 he had a temperature of 103 degrees F. On July 9 (after graduation) he was examined by X-ray and found to have moderately advanced tuberculosis in both lungs, with cavity formation and sputum positive for the disease. During the next fourteen months, four of his former school-mates who had left school after graduation were found to have the disease. This prompted a thorough study of the school faculty, employees, seventh and eighth grades, and pupils in the high school. At this time the teacher and four students still in high school were found to be infected. Re-examination (four months later) revealed two additional cases. Five additional cases were found by follow-up of the graduating class in which the original case had been found.

The only significant out-of-school contact with tuberculosis was found to be between the boy in whom the disease was first diagnosed and a sporting goods dealer who was also a scoutmaster. This man died of tuberculosis soon after the diagnosis was made in the first school case. It is believed that this man was the source of the epidemic, through the high school boy he probably infected.

147

Tuberculosis as a School Problem

J. Arthur Myers stated in 1946 that X-ray inspection of the chest is of little value in the examination for tuberculosis among children up to the age of twelve or fourteen years. In those who have recently been infected, it fails to show any evidence of the disease in 90 to 95 percent of the cases examined.

The tuberculin test is our most potent weapon against tuberculosis in the schools, according to Dr. Myers. Every tuberculin reactor has been in contact with one or more contagious cases of tuberculosis among his adult associates. Seeking the responsible individuals may be extremely fruitful when it is properly done. The prevention of further exposure of the infected school child may be of great importance in the maintenance of his future health.

The exact percentage of high school girls and boys who have primary tuberculosis is not known for the country as a whole. A fair estimate for the entire country in 1946 was between 12 and 15 percent. Studies have proved the importance of making X-ray film inspections of the chest of every *tuberculin reactor* in this age period. Adequate examination of all high school students should be compulsory. School boards have the authority to make it so.

Administrators, teachers, clerical workers, cooks, engineers, janitors, bus drivers, and all others who take any part in the operations of schools should also be examined for tuberculosis.

Wherever surveys have been adequately made, from 1 to 1.5 percent of teachers have been found to have clinical tuberculosis, and from 30 to 60 percent have been infected with the disease at some time or other as manifested by the tuberculin reaction. Thus, a significant tuberculosis problem exists among the personnel of our schools which needs to be solved.

148

Tuberculosis Case Finding in Syracuse Schools

William E. Ayling, M.D., of Syracuse Medical College, claimed in 1947 that twelve years of tuberculosis case finding among public and parochial high school pupils of Syracuse had demonstrated the value of this procedure.

Searching for tuberculosis among apparently healthy children, such as are in daily attendance at school, was found valuable from at least four standpoints:

1. The education of pupils and parents as to the importance of this disease and the methods of its prevention, detection, and cure
2. The individual welfare of the child, since active disease found early is quickly cured
3. The protection of public health by exclusion and supervision of the active cases found in the schools
4. The discovery of unknown cases of active tuberculosis that were a source of infection

During the twelve years approximately 5,000 positive reactors were X-rayed in school, and of these 37, or 0.7 percent, were found to have active disease and 329, or 6.5 percent, were classified as "suspicious." About an equal number, 45 percent and 47 percent, made up the larger groups of those "essentially negative" and those classified as "apparently healed."

Without including salaries, the cost of materials, such as films, stationery, printing, supplies, and transportation of X-ray machine, for one typical year was \$336.95. This represented a cost of 15 cents per pupil given the tuberculin test, \$1.41 for each one X-rayed, or \$18.72 for each suspicious and

active case found. Of 239 pupils X-rayed, 100 each paid \$1.00 toward the cost, so this reduced the cost to the city about one-third.

The amount of approximately \$13.00 expended (\$18.72 less one-third) for each suspicious and active case found was judged to be very small for finding such cases.

If estimated salaries were included, the cost, of course, was considerably more, being 78 cents per pupil tested, \$7.34 per X-ray, and \$97.51 for each suspicious and active case found.

A number of conditions other than tuberculosis were found by chest X-rays. Of 1,676 pupils X-rayed over a five-year period, 28 had heart abnormalities, 19 had deformities of the ribs, 23 spinal curvatures, and 4 bronchiectasis. Of 161 adults, 19 had heart conditions, 3 spinal curvatures, 1 deformed ribs, and 1 a lung tumor.

There was a marked decrease in the incidence of tuberculous infection during these twelve years in Syracuse high schools.

149 *Preventing Tuberculosis in Los Angeles Schools*

Vera C. Waegle, M.D., of the Los Angeles City School System, said in 1946 that for a number of years the students in the high schools of Los Angeles have had periodic programs of tuberculosis education and case finding.

In 1944 the program was carried on in the City College, in ten senior high schools, in seven junior high schools, and in four elementary schools located in high-incidence areas. These schools had a total enrollment of 28,629 pupils. All of these pupils received information about tuberculosis, had an opportunity of attending lectures and motion picture films, and were given printed material on the subject. Many schools incorporated the material into their own health program and activated it by special demonstrations, auditorium skits, and articles in their own school papers.

The number of students who had been tuberculin-tested through the consent of their parents was 79 percent by 1945.

In Los Angeles, in the year 1944-45, 14.1 percent of the students tested, or 3,145, had positive tuberculin tests. Efforts were made to obtain X-rays of every child with a positive Mantoux test by the use of a portable X-ray machine.

Out of the number of students X-rayed in 1944-45, 89 were found to have significant tuberculosis, of whom 52 were active cases. In addition, 385 cases were carried under observation, as potential cases of active tuberculosis, with repeated examinations and specially arranged programs.

Probably the most effective aspect of the program for education about tuberculosis was its emphasis on the fundamentals of personal health habits, cleanliness, adequate rest, and balanced diet. When a student's own health condition and the X-ray findings were discussed with him by the conference

nurse and pointed up by the presence of a positive tuberculin test on his own arm, the whole matter was far more likely to impress him than by reading a few lines about it in a book.

Education of all the students was the major objective in this program of the Los Angeles City Schools. A secondary objective was that of case finding. Both aspects of the program had their values.

150 *Tuberculin Testing in Five Illinois High Schools*

Adelaide R. Ross and Joseph H. Kinnaman reported a study in 1942 of student reactions to a program of tuberculin testing among senior students in five high schools.

About 80 percent of a total of almost 1,200 high school students took the test. In 72 percent of the cases those students who took the test made the decision to do so themselves. About 20 percent of the pupils who took the test indicated that their parents had made the decision for them.

Among the group of pupils who did not take the tuberculin test the decision against the procedure was made by parents almost as frequently as by the student himself.

A perfect score on a test of ten questions about tuberculosis was found to be significantly correlated with taking of the tuberculin test. In other words, sufficient knowledge of tuberculosis tended to promote taking of the skin test.

It was concluded from this study that the tuberculosis education program in the school should be broadened to include more parent education and that indifference, or lack of student interest, was an important cause of failure to take the tuberculin test.

151 *Minnesota High Schools Wage TB Warfare*

The high school press project is one of the major means by which teenagers in Minnesota are made aware of the tuberculosis problem.

The project is sponsored by the National Tuberculosis Association and the Columbus Press Association, as well as by state and local Christmas seal units.

In this project high school students tell the story of tuberculosis in feature stories, editorials, cartoons, poetry, or in any other way that they feel will best present facts on tuberculosis to the readers of the high school press.

During 1952 more than fifty Minnesota high schools entered their newspapers in competition with others for national awards in the project. The papers contained interviews with sanatorium doctors, former tuberculous patients, and members of families in which there was a patient with this disease.

Three hundred three schools from thirty-eight states, the District of Co-

lumbia, and Hawaii were represented in the national competition. Five Minnesota schools won national awards.

152

Lincoln County Gets a Certificate for Control of Tuberculosis

The National Tuberculosis Association announced in 1942 that Lincoln County, Minnesota, was the first county in the United States to be awarded a certificate for the control of tuberculosis because of its school and community activities against this disease.

According to the plan developed in Minnesota, any county that had a death rate from tuberculosis of less than 10 per 100,000 people and a record of less than 15 percent of high school seniors with a positive reaction to the tuberculin test would be awarded a certificate signed by the governor of the state and the president of the state medical society.

In gaining the award Lincoln County had a tuberculosis death rate of only 5.5 per 100,000 and a positive reaction to the tuberculin test in only 7.4 percent of the high school seniors.

153

Certificates for Tuberculosis Control in Schools

Jay A. Myers, M.D., chairman of the American School Health Association's Committee on Tuberculosis, pointed out in 1947 that the American School Health Association has a certificate for adequate tuberculosis control programs in schools which is available to all state and municipal subcommittees. When a school qualifies, its name is inserted, and the form is signed by the president and secretary of the American School Health Association and the chairman of the local subcommittee.

The committee emphasized that each state subcommittee is free to prepare the qualifications which it considers applicable to its state and would justify certification of all schools that qualify. The committee believes that certification of schools for tuberculosis control programs should be extended to every school in the nation.

154

Tuberculosis in Quebec Schools

The National Tuberculosis Association reported in 1944 that an examination of 16,524 teachers in the Province of Quebec, with the exception of the city of Montreal, showed that 212, or 1.3 percent, had tuberculosis.

Tuberculosis was twice as prevalent among religious teachers as it was among lay teachers, even though most of the religious congregations had required, for several years, an X-ray examination of the chest from all applicants for admission to their groups.

In the city of Montreal the results of examination for tuberculosis did not

show the same trend, as only 15 teachers were found to have tuberculosis out of 4,695 examined.

The Legislative Assembly of the Province of Quebec on May 17, 1941, unanimously passed an act stating that no person can teach in a public, private, or independent school unless he produces every year a physician's certificate stating that he "suffers from no infirmity or disease which renders him unfit for teaching" and "a certificate attesting that such person is free from tuberculous disease."

155

Expectancy for Outbreaks of Poliomyelitis in Schools

Theodore H. Ingalls, M. D., and A. Daniel Rubenstein, M.D., of the Harvard School of Public Health, pointed out in 1950 that when a case of poliomyelitis occurs in a camp or a school, the physician in charge is confronted with a number of perplexing problems and several urgent decisions. Is it likely that additional cases will occur, and if so, how many, and when? Should the school or camp continue to operate?

Two sources of information concerning the occurrence of poliomyelitis in schools and camps were used in this study. One was the data obtained by a questionnaire answered by heads of 140 boys' and girls' camps in New England, and by physicians responsible for the health of forty representative boarding schools in the northeastern United States. The completed form showed how many times poliomyelitis had appeared and the dates of onset of all cases of the disease occurring in the camp or school since 1935. Second, by letter, telephone call, or visit, this information was cross-checked and further extended through the records of the six state health departments in New England. The reliability of clinical diagnoses is good, since most outbreaks were investigated by health officers as well as by clinicians, and most patients had the advantage of hospital study.

In thirty-two of thirty-six instances, with only a single case recognized during the first five days of the outbreak, no secondary spread occurred.

When the outbreak started with recognition of not one but a wave of two or more cases during the first five days of the outbreak, spread occurred on seven of ten occasions.

Following the appearance of poliomyelitis in a camp or school, the number of cases developing simultaneously within the first three or four days of the outbreak may be taken as a useful index of the likelihood of subsequent cases within the group.

The prevalence of poliomyelitis in camps and boarding schools corresponds in general to that of boys and girls of the general population. Under existing circumstances, multiple-case outbreak is to be expected in the ordinary camp or school only about once every century.

School Opening Versus Poliomyelitis

Officials of the New York State Department of Health and Department of Education indicate that the actual decision as to whether or not schools shall open when infantile paralysis is prevalent must rest with the local school and health authorities, since only they are familiar with the circumstances concerned in a given instance. However, the following suggestions for the guidance of local authorities are presented.

There would seem to be little justification for advising the postponement of the opening of schools even if poliomyelitis has been prevalent in a community. A possible exception might be a community in which poliomyelitis cases are on the increase at the time schools are scheduled to open. Because of the seasonal characteristics in the great majority of instances in areas in which poliomyelitis has been prevalent, the occurrence of cases will be on the downswing at the time the schools are scheduled to open, and there has been no evidence that the opening of schools under these circumstances has had harmful results.

In most instances the children will have no more contact with others at school than they do when school is not in session. They are usually under more careful surveillance for the first appearance of symptoms than is the case when school is not in session.

If schools open in a community in which poliomyelitis is still prevalent, care should be taken in the physical education and athletic programs to prevent excessive fatigue of the students, since there appears to be a relationship between unusual fatigue and the development of the paralyzing form of the disease.

There may be more reason for the postponement of the opening of schools which obtain pupils from scattered areas. Each case will have to be decided on its own merits.

Schools drawing pupils from areas in which there have been only a few scattered cases of poliomyelitis should open on schedule.

Schools drawing students from areas which have had an unusual prevalence of poliomyelitis together with areas that have had very little of this disease might wish to postpone their opening until the prevalence has markedly diminished in the affected areas. The exact time of the opening of such a school will have to be determined locally.

School Openings and a Polio Epidemic

T. Francis, Jr., and G. C. Brown reported in 1948 on a study that was made in Tennessee to discover if schools could be safely opened in the autumn during an epidemic of poliomyelitis.

The study was conducted in relation to an epidemic of poliomyelitis that

had occurred in the summer and fall of 1945 in certain rural areas of Tennessee. The date set for the opening of schools in this region followed closely on a heavy incidence of this disease.

Two rural schools of forty-eight and fifty-one pupils respectively were selected for study. In both schools the stools (intestinal discharges) of all pupils were examined by laboratory means for the possible presence of poliomyelitis virus.

In one school none of the pupils had detectable virus in their stools at the time of the first collection, but virus was isolated from one pupil two weeks later. It was judged that this infection came from outside the school as all other pupils were free of the virus and the one child in question had an earlier association with a paralytic case of poliomyelitis.

In the other school two children were carrying the virus in their stools on opening day, but only one of these carried the virus two weeks later and no other child in the school acquired the infection.

The study showed no significant spread of poliomyelitis in the two school groups and it was concluded that the close association of children within families was a more likely means for the spread of poliomyelitis than the less intimate, nonfamily school contacts. From this study it would appear that there would have been no justification for the postponement of school opening because of the fear of spreading infantile paralysis.

158

A School-sponsored Epidemic of Mumps

Milton I. Levine, M.D., of the Cornell University Medical College, gave an account in 1944 of a sponsored epidemic of mumps in a private school in New York.

Among the so-called contagious diseases of childhood, mumps has one quality peculiar to itself—that of being less severe in complications before puberty than after this period.

It might seem reasonable to attempt to expose children to cases of active mumps in order that they might develop an immunity prior to the onset of adolescence.

The present paper reports the results of such an attempt in a private school of 161 children during the mumps epidemic in New York City in the early months of 1942. This school had for the twelve previous years been remarkably free from mumps.

On January 22, 1942, one of the children developed mumps and soon exposed others. A letter was sent to the parents suggesting that no attempt should be made to protect the children from mumps.

This letter brought forth the unanimous approval of the parents, with only one questioning note from a pediatrician who felt that no child should

ever knowingly be exposed to a disease but consenting to the plan if most of the parents agreed.

Accordingly, no restrictions were placed on exposed children, with the exception of children aged three, four, and five years.

Within a period of three months, 62 children (54.4 percent) from a total of 114 susceptibles in the upper eight classes developed the disease. Four children in the lower three classes contracted the disease from their brothers or sisters.

Of the 66 children who developed the disease, 6 had complications. The parents of 4 children developing mumps encephalitis were reassured that there would be no aftereffects.

Two other complications which developed were a moderately severe inflammation of the testicles in a boy aged twelve, and a possible inflammation of the pancreas in a child of eight years.

When the epidemic subsided, a questionnaire was sent out to each family requesting complete information on the children who had contracted the disease, with an added question applying the inquiry to other members of the family. The final analysis revealed that besides one teacher, who had been incapacitated with the disease for two weeks, 10 parents had suffered from the infection—a possibility completely overlooked when the plan was suggested.

Dr. Levine concluded that it was doubtful if any further epidemics would be sponsored by the school.

159

Diphtheria Immunization Statistics

F. Robert Freckleton reported in 1949 that in the city of Rensselaer, New York, reports from physicians over a five-year period indicated that only 5 to 13 percent of the preschool children in that community had been immunized against diphtheria.

County Department of Health officials doubted the accuracy of these figures and conducted a house-to-house survey by the Public Health nursing staff to obtain immunization histories for each preschool child in the families visited. School health entrance records were also examined in regard to the immunization histories.

The house-to-house survey of 855 preschool children showed that 69 percent had been immunized against diphtheria and school records of 214 children showed that 95 percent had been protected against this disease before entrance into school.

This study therefore revealed that medical impressions are not always an accurate guide to the immunization status of a child population.

160

Diphtheria Epidemic in a Girls' School

M. L. Fuller, M.D., in discussing the advisability of booster immunizations against diphtheria mentioned a study in 1950 that had been made of an epidemic of diphtheria occurring in a girls' private school with good hygienic facilities and no overcrowding.

In this school it was found that 94 percent of the children had been immunized against diphtheria and 80 percent were Schick-negative. Despite this high level of immunization, however, eighteen cases of diphtheria occurred among 322 school children.

Only three of the cases occurred among children who had never been immunized. The other fifteen cases occurred among the group of girls who had been immunized against diphtheria. However, only 5 percent of the immunized group got the disease, whereas 13 percent of the nonimmunized children developed diphtheria so there was some evidence that the immunization was still exerting a protective influence.

The severity of the illness in some of the immunized children indicated a high degree of virulence on the part of the diphtheria organism involved. Laboratory studies showed this to be of the *gravis* type. This small epidemic shows the possibility of an outbreak of diphtheria in a highly immunized community. It shows the wisdom of booster immunization in order to maintain a high level of resistance to this serious illness. The recommendation is made that immunization against diphtheria in infancy should be followed by a booster dose of antigen every three years irrespective of Shick-test readings.

161

Diphtheria Epidemic in a Medford School

A. Erin Merkel reported in 1951 that an epidemic of diphtheria in a Medford, Oregon, school showed that this disease could occur even in an immunized group of children and that the school environment may be partly responsible for spreading of the disease.

During October 1949 a twelve-year-old boy died of diphtheria with involvement of the heart. Within the following ten days eleven additional cases of diphtheria occurred in children from the same school, except for one preschool child who had been exposed to one of the school children.

The school in which this outbreak occurred was equipped with drinking fountains with metal spouts. When the water pressure was low many children had been in the habit of placing their lips over the spouts to increase the flow of water by suction. It was suspected that the low water pressure and the drinking habits of the children were at least partly responsible for the spread of the disease.

Ten other cases of diphtheria, making a total of twenty-two cases, occurred

among other children and adults. Five of the cases ended in deaths, due mainly to involvement of the heart.

Studies showed that five of the patients had received full courses of diphtheria toxoid and a booster dose. It was concluded that active immunization against diphtheria does not guarantee protection against the disease, but that it offers a valuable degree of protection. In this epidemic, for instance, clinical diphtheria was 4.4 times as frequent in nonimmunized as in immunized children. The ratio was 7 to 1 if the partially immunized children were counted among the susceptibles.

The diphtheria organism involved in this epidemic was judged to have extraordinary virulence. It was found that diphtheria antitoxin in recommended doses was ineffective in several striking instances.

162***Nasal Diphtheria in School Children***

Warren Winkelstein, Jr., M.D., of Albany, New York, commented in 1950 on four cases of nasal diphtheria in children who had been previously immunized against this disease. This study of an outbreak of diphtheria in an upstate New York community revealed cases which presented varying degrees of nasal discharge. In all cases, however, there were small ulcerations at the junction of the nose and the cheeks. The most characteristic symptom was a mild irritability on the part of the child. Fever was not a prominent symptom.

In three cases the diphtheria organisms were proved to be present by culture. In none of the cases were germs recovered from the throat. The occurrence of these cases seems to indicate that nasal diphtheria can occur in persons who have been previously immunized and that nasal discharges in these children may be a source for the spreading of the disease.

In this outbreak, eighteen carriers were discovered. However, in only one of the four cases in which the disease was diagnosed had there been previous contact with a carrier of the disease.

163***Ringworm Epidemic in Illinois Schools***

The Illinois State Department of Public Health stated in 1945 that ringworm of the scalp, which apparently started in the eastern part of the United States and spread westward, had affected hundreds of Illinois school children in what was reported as one of the severest epidemics in the history of this country.

A highly infectious disease, ringworm is produced by a fungus type of organism. The fungus spreads outward from the first point of infection, and travels upward along the hair shafts in the diseased regions, the infected hair often appearing to be nibbled off. In the beginning these areas are about

one-fourth of an inch in diameter, but may gradually enlarge and fuse to such an extent as to involve practically the entire scalp. As a rule, however, the disorder is limited to from three to a dozen small coin-sized patches, wholly or partly covered with white, gray, or yellowish scales. There is usually no redness, and there may or may not be other signs of inflammation. Itching in various degrees of severity may occur.

Practically all the cases of ringworm of the scalp are found in children. The disease spreads rapidly by direct contact or through the use of an infected comb, brush, hat, or similar article. Certain types of the infection may also be spread by dogs, cats, and other pets.

The Illinois Department of Public Health made the following recommendations regarding the control of epidemics of ringworm of the scalp:

1. All school children should receive a careful examination of the scalp. The use of filtered ultraviolet rays (Wood's light) simplifies the examination and increases its accuracy.
2. Patients with ringworm should be excluded from school, unless special precautionary measures are applied.
3. Children under treatment should wear a linen skull cap at all times. These caps should be changed at least once a day and boiled for ten minutes after each use.
4. Barbershops should be informed that infected combs and brushes will spread the infection, and such articles should be properly sterilized after each use.
5. Parents should be instructed to wash the child's scalp immediately after each haircut. Ointments prescribed by a physician may be used before the shampoo in order to provide additional protection.
6. Pets, particularly kittens, should be inspected under filtered ultraviolet rays, as they may be carriers of ringworm.

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Ringworm of the Scalp

Richard J. Steves, M.D., and Francis W. Lynch, M.D., reported in 1947 on an epidemic of ringworm of the scalp which involved 747 school children in two communities of the Middle West.

It was found that the schools themselves were probably not a major factor in the spread of the disease. Barbershops and theater seats were suspected as important factors in the spread of the disorder.

It was concluded in this instance that public health aspects far outweighed treatment of the individual and that it was the responsibility of school, city, county, and state health officers to take prompt action to stop the epidemic, which was controlled only at great cost and difficulty.

The Wood light was found to be indispensable during this epidemic of

ringworm of the scalp, both for the detection of unrecognized cases and for the readmission of students to school after treatment. It was pointed out that any students observed to have gray, scaling patches on the scalp with broken hairs should be suspected by teachers as having ringworm of the scalp and should be referred to the proper school health authorities such as the school nurse or doctor.

In this study, a selected series of 486 students were treated by two methods. The removal of infected hairs by hand cured 25 percent and X-ray treatment of the scalp cured 80 percent. This latter was judged by medical men to be the best method of treatment in this epidemic.

165

Ringworm of the Scalp in Los Angeles

Roy O. Gilbert, M.D., described in 1949 an outbreak of ringworm of the scalp among school children of Los Angeles County in which, out of 12,493 children examined with the Wood's light in various elementary schools, 164 were found to be infected with the disease.

Owing to the requirement of the Administrative Code of California under Title 5 on Education that no pupil, while infected with any contagious or infectious disease, shall be allowed to remain in any of the public schools, it became necessary to exclude these children from school.

Arrangements were made with the local school authorities for home-teaching classes, and the patients were referred to private medical practice for treatment. The relatively low economic level of the community resulted in very few cases coming under the supervision of dermatologists.

Of those infected, 80 percent were out of school more than two months, and 44 percent were out more than three months.

Experience in Los Angeles County with this outbreak of ringworm of the scalp, caused by a fungus identified as *M. audouini*, and a review of the literature on this subject led to the following conclusions:

Wood's lamp was found to be an indispensable piece of equipment in case finding. X-ray removal of hairs provided the best prospect for cure in the shortest time. Removal by hand was employed but was less efficient and more disagreeable. Shaving the scalp every seven to ten days was helpful in preventing the spread of the infection but was not a satisfactory substitute for removal of the hair entirely. The most effective topical application was an ointment containing 5 percent salicylanilide in carbowax 1500.

With proper supervision of treatment and adequate protective covering of the scalp, it was found that there need be no loss of school time after treatment was started. Enlistment of the barbers of the community in refusing to serve clients with obviously infected scalps, and proper sterilization of instruments was found to be important. Cutting instruments can be satisfactorily sterilized in petroleum oil at 100 degrees C. without detriment to

the instruments. It was found that complete discipline must be maintained on school grounds with regard to exchange of headgear between children.

166

Ringworm in Charlottesville School Children

Young, Smith, and Adams of Charlottesville, Virginia, reported in 1952 on a study of annual examinations of all grade school children in that city for ringworm of the scalp.

During the period of the study, 4,518 children were examined and 33 cases of infection were found. In all instances the fungus involved was that of *M. audouini*.

Eighty-five percent of the infections occurred in the lower four grades. The yearly average incidence of ringworm of the scalp among the white children was 0.2 per 100, and among Negro children 3.3 per 100.

Since no epidemic of ringworm of the scalp was present during the time of this study, and since only two children had been exposed to known cases of the disease elsewhere, it was concluded that the infection rate revealed by the investigation represented the degree of local reservoir for spread of the disorder.

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New York City Changes Regulations on Ringworm of the Scalp

The New York City Department of Health announced in 1953 that school children with ringworm of the scalp will no longer be excluded from school if they are placed under medical care.

Under the previous practice children were excluded from school as soon as they were found to have ringworm of the scalp. Readmission was permitted only when the children were no longer infectious, as determined by adequate treatment and examination under the Wood light in a health department clinic to reveal freedom from infection.

Under this regulation children suffering from this disease were excluded from school for months and even years as the infection required prolonged treatment even under ideal conditions.

It was found in New York City that when children with this disease were rigidly excluded from school, the spread of ringworm of the scalp was not abated. In one school, for example, a survey in 1944 revealed 1.7 percent of the children infected. These children were excluded, as were those found to be infected in the following years. Nevertheless, a resurvey made in 1948 indicated that 2.4 percent of the pupils had ringworm of the scalp.

A survey of 13,293 school children in Louisville, Kentucky, showed a prevalence of ringworm of the scalp of only 0.4 percent. Although infected children were permitted to attend school, a survey made seven months later showed no increase in prevalence of the disease.

Public health officials in New York City now believe that ringworm of the scalp is spread chiefly in the home. The new regulation permitting infected children to attend school while under treatment is based upon the observation that this disease is a mild disorder which is ultimately self-curative and without complications.

168

Rochester Schools Control Head Lice

Albert D. Kaiser, M.D., Health Officer of Rochester, New York, says that head lice constitute a common complaint among school children. It is not only an annoying condition to those infected and a menace to children whose home conditions are good, but it is responsible for many days of absenteeism from school. In Rochester schools during the 1944 and 1945 session, infestation with head lice was the second greatest cause of absenteeism.

The louse deposits its eggs firmly fastened to the hair. The complete developmental cycle is sixteen days, and the average life of a louse is one month. The larvae must have food frequently to survive. They live chiefly on human blood. If well fed, the louse can live for ten days without food while separated from its host.

To simplify the treatment and control the source of contact, a preparation of DDT powder (ten parts DDT and 90 parts inert powdered talc) was utilized in the Rochester schools. Head inspections were made by the school nurse on all children in a grade and any infected child was treated by the school nurse. With a small atomizer, the DDT powder was sprayed on the child's hair, a paper towel being placed over the eyes to prevent irritation. A towel or kerchief was placed over the scalp to prevent the loss of the powder and to hold the lice that came to the surface and the child was sent home with instructions to keep the head covered until bedtime. In the morning the hair was combed with a fine comb to remove the dead lice and as many eggs as possible.

The child was permitted to return to school the next day following an inspection by the nurse. Even if the nits were not all combed out, the child could remain in school and receive daily inspections until the seventh day, when another application of DDT powder was made, following a shampoo given the previous evening. At the end of the second week another inspection followed. If any nits were detected, a third application of DDT powder was made. Frequently this third application was unnecessary.

In the meantime the nurse had visited the home to inspect all other members of the family.

The results were most satisfactory. In all cases treated, the live lice were promptly killed, usually within two hours.

None of 350 children treated in the foregoing manner developed recurrences of live lice within a four-week period. A routine procedure has now

been established in all of the Rochester schools. It is felt that the incidence of head lice will be materially lessened if constant inspection and treatment are employed.

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Treatment of Head Lice

Gaines W. Eddy, of the United States Department of Agriculture, commented in 1948 on the treatment of head lice in over 1,000 persons, mostly elementary school children, in Illinois and Indiana. All persons were treated with MYL or DDT louse powders or NBIN emulsion. All persons treated were infested with either lice or eggs.

Upon examination eight to ten days later, no live lice were found following the use of DDT or NBIN, but on three persons treated with MYL live lice were present. The MYL powder could not be depended upon in all instances to give complete control in one application.

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Intestinal Worms in School Children

The Florida State Board of Health reported in 1949 that the usual test for intestinal parasites is relatively simple. Worms live in the intestine securely attached to its inner wall, but microscopic eggs of characteristic appearance are passed with the bowel movements. The test is a microscopic search for the eggs of worms or the cysts of amoebae. The microscopic search is made by carefully trained professional workers.

Among 134 children in a Florida school, 94 were found by stool examinations to be positive for hookworm. Other kinds of worms (parasites) were present in a small number of the children.

Chapter X

School Nursing

In recent years there has been better preparation of school nurses and a closer alliance of the nurses with educational and school organizations as well as an increasing tendency toward professional organization. During the period from 1937 to 1951 it is reported that the number of school nurses employed by boards of education increased from 3,477 to 6,088. The need for leadership in this field has been stressed since few colleges or universities offer specific preparation for school nursing.

In Chicago, as in a number of other school districts, school nurses now enjoy the same benefits and privileges as regular classroom teachers.

The functions of the school nurse have been increasing in scope and educational content during recent years. The value of the nurse's contribution to the school health program, however, is apt to vary greatly according to the philosophy of the school administrators.

The functions of school nurses have been clarified considerably. In San Mateo County, California, sixteen school and public health nurses working in conjunction with a school health consultant have specified definite responsibilities of the school nurse in a series of school and community relationships. In Sonoma County, California, a comparable group worked for one year to agree on specific functions of the school nurse.

Within recent years the participation of public health nurses in school health programs has increased substantially. The public health nurse is now participating as a member of a group of specialized professional workers in all phases of the school health program. In Merced County, California, a joint committee of school and public health nurses worked together for two years to agree upon common and divergent functions of these two groups of participants in the school health program.

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School Nursing Is a Growing Field

Emily S. Brown, R.N., school nurse for the Elizabeth, New Jersey, Board of Education, reports that during the period from 1937 to 1951 the number of school nurses employed by boards of education increased from 3,477 to 6,088.

In recent years there has been better preparation of school nurses and a closer alliance of the nurses with educational and school organizations as well as an increasing tendency toward professional organization themselves.

Miss Brown believes that school nursing cannot be conducted adequately unless the nurse's time is devoted entirely to the school. In progressive school

systems the school nurse is part counselor, educator, and consultant and helps to make important contributions to the child's educational experience.

Miss Brown declared that school nurses are not responsible for the alleged overlapping of public health nursing activities. School nurses do not live in an ivory tower, unaware of the need and lives of the families of the children they care for, she states.

It is also Miss Brown's belief that school nurses should be given credit for study programs in health education as well as in public health nursing since many of the nurses have to meet health teaching requirements and prefer to take work in health education.

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School Nursing Leadership

Gertrude E. Cromwell, R.N., M.S., supervisor of school nursing in Denver, Colorado, pointed out in 1955 that at least four factors are important in the development of leadership ability in school nursing.

To grow in leadership it is essential to (1) nurture one's own native intelligence; (2) develop skill in the use of talents of others; (3) attain adequate understanding of human relations, and (4) inform others about the school nursing program and how it can be utilized.

Since few colleges or universities have seen fit to offer specific preparation for school nursing, a nurse must maintain an open, questioning mind which seeks information from reading, observing, and questioning others. The use of one's native intelligence in such a manner can help the nurse to gain by experience what she may not have received in her professional preparation.

Schools are full of people with talents, but all too often the school nurse feels herself different and set apart from the rest of the school employees. If she is the leader she should be, she will take advantage of every opportunity to get acquainted with the people around her in order to learn of their problems as well as their talents and skills.

The nurse must have understanding of the people with whom she works in order to plan her nursing program with the co-operative help of others. Working with teachers, principal, parents, doctors, children, and others, she should be able to submerge herself and lead others out for the development of a sound school nursing program.

Human relationships are always important in the development of any program. A nurse must lead, teach, or suggest. Rarely can she command. The problem of successfully working with others must be solved through understanding of the processes of good human relations.

Often it is difficult for nurses to inform others about the school nursing program. Some teachers are interested only in their own little circumscribed areas and may consider the school nurse a nuisance. Others look upon the nurse as a friend and ally in helping children. In general it can be said that

the more informed teachers are about the nature of the school nursing program, the more co-operative and helpful they will be.

173***Status of School Nurses in Chicago***

Madeline H. Roessler, R.N., supervisor of health services for the Chicago schools, reported in 1954 that the teacher nurses of that city now enjoyed the same benefits as regular classroom teachers.

The teacher nurse is now granted sick leave with pay, sabbatical leaves for travel or study, regular salary increases, retirement after twenty years of service, and death benefits on a graduated basis.

The teacher nurse is also given all privileges of attendance of professional meetings and other advantages that may be enjoyed by the regular teaching staff.

In 1949 the Chicago public schools were virtually without systematized and effective medical and nursing services. A committee of over forty civic and professional organizations, known as the Joint Committee on Health Services for the School Child, helped to promote the existing program. The Chicago Medical Society laid the foundation for the teacher-nurse program and continues to assist the schools in the present program.

In Chicago applicants for the teacher-nurse positions must complete two trial periods, one of which is for a month's duration and the other for a full year. After this length of service the applicant is eligible for examination for a regular certificate if recommended by the Bureau of Health Services. At the time of this report there were twenty-one teacher nurses, seventeen teacher technicians, a medical director, and two supervisors in the program. Ultimately, a total of 281 teacher nurses is the objective.

174***School Nursing at the High School Level***

Agnes A. O'Leary, R.N., M.P.H., assistant professor of public health nursing at the University of California at Los Angeles, reported in 1952 that the nurse at the high school level contributes to all areas of the school health program.

The school nurse assists in planning of a program that will meet the objectives of the total school health program as well as in health appraisal of the high school pupil.

The school nurse participates in health education activities and assists in the continuous evaluation of the school health program through observation of changes in the health behavior of the students and through statistical analysis of school health records.

The high school nurse also co-operates with the health co-ordinator to develop a base for effective relationships with teachers, parents, and pupils.

The value of the nurse's contribution to the school health program varies according to the philosophy and understanding of the school administrators.

175 *Functions of School Nurses in San Mateo County, California*

Sixteen school and public health nurses of San Mateo County in California expressed a group opinion in 1952 as to recommended functions of school nurses.

Although it is anticipated that the duties of school nurses will vary somewhat according to the differing needs of individual districts, the following suggestions as to the functions of the school nurse were deemed helpful to school administrators, teachers, parents, and others, as well as to the nurse herself, in standardizing somewhat the responsibilities and opportunities in this field. The recommended responsibilities or functions were as follows:

1. *Pupil-nurse relationships.*—The school nurse shall:

- 1.1 Assist the teacher in observations of pupils suspected of illness.
- 1.2 Render first aid to pupils when such appears necessary (but this shall not supplant the responsibility of the teacher for giving first aid).
- 1.3 Inspect children for evidence of health needs on referral by classroom teachers.
- 1.4 Inspect the vision of school children unless or until this function is carried out by the classroom teachers.
- 1.5 Interpret to the children themselves the meaning of health problems with which they are directly concerned.
- 1.6 Handle pupil health emergencies in the manner prescribed by school law and local school regulations.
- 1.7 Instruct pupils on health problems in classrooms on occasions when invited to do so by the classroom teachers. (This should not supplant the more extensive health instruction for which teachers are responsible.)
- 1.8 Inspect children for health conditions *if* this is a routine procedure in the school district involved.

2. *Teacher-nurse relationships.*—The school nurse shall:

- 2.1 Instruct teachers in proper procedures for:
 - 2.1.1 Daily health inspections.
 - 2.1.2 Weighing and measuring of children.
 - 2.1.3 Adequate first-aid procedures.
 - 2.1.4 Vision testing, whenever this is judged to be a legal function of teachers.
 - 2.1.5 Care of acutely ill children.

- 2.1.6 Adequate record-keeping of child health status.
- 2.1.7 Preparation for annual teacher-nurse conferences on pupil health.
- 2.1.8 Maintenance of a first-aid kit.
- 2.2 Report follow-up findings on pupil health problems back to the classroom teacher.
- 2.3 Interpret functions of the school nurse to the teachers.
- 2.4 Check periodically with teachers about children who have health problems.
- 2.5 Assist the teacher by giving occasional talks or demonstrations on health in the classroom when requested to do so by the teachers. School nurses should not be expected, however, to be responsible for regular classroom instruction in health education.
- 2.6 Supply source materials on health to the classroom teacher as the nurse becomes aware of these materials.
- 2.7 Co-operate with classroom teachers in development of the curriculum in health.
- 2.8 Have an annual conference with each teacher in regard to the health status of each child in the classroom.
3. *School administrator-nurse relationships.*—The school nurse shall:
 - 3.1 Participate with a representative administrative or policy-forming group (such as a health council or committee) in planning the school health program.
 - 3.2 Provide school administrators and planning groups with adequate reports on the health problems of children so that this material may be used in the planning of programs.
 - 3.3 Request administrative assistance in:
 - 3.3.1 Planning the teacher-nurse conference schedules.
 - 3.3.2 Procedures for first aid.
 - 3.3.3 Establishing a routine method for handling emergency cases.
 - 3.3.3.1 Parent directions.
 - 3.3.3.2 Locating parents.
 - 3.3.4 Securing proper space and telephone service. (Privacy for discussion of health problems with children or parents should be assured.)
 - 3.3.5 Establishing responsibility for pupil health record-keeping. (This should be primarily a function of the classroom teacher rather than the nurse.)
 - 3.4 Report to the principal or other school administrator, in writing, any unsafe or unsanitary conditions in the school environment, as required by law.
 - 3.5 Present to the school principal a school nursing calendar, by month

and day, of projected activities for the year, for approval or adjustment.

- 3.6 Clarify with the school administrator her responsibilities as an "attendance officer." (This should be a responsibility of the teacher and administrator rather than the nurse.)

4. *Parent-nurse relationships.*—The school nurse shall:

- 4.1 Interpret to parents the health needs of the child as revealed by school health records, health examinations, and school experiences with the child.
- 4.2 Encourage parents to take proper steps for the correction of defects or other health problems of the child.
- 4.3 Inform parents of community resources for meeting health needs of the child when it is apparent that such help is needed.
- 4.4 Co-operate with P.T.A. and other parent groups in the development of health programs or special health projects.
- 4.5 Make follow-up visits to the home as necessary to encourage and enlighten parents in correction of pupil defects or other health conditions.
- 4.6 Call parents by telephone (whenever possible) in case of emergency illness of the child to properly inform them of the condition of the pupil and to request directions in respect to disposition of the case.
- 4.7 Inform parents of pupil exposures to communicable disease.

5. *Community-nurse relationships.*—The school nurse shall:

- 5.1 Assist the administrator in development of a good public relations program, with respect to the school health program.
- 5.2 Make whatever contacts with local or county community agencies as are necessary to facilitate school and agency relationships which are helpful to the child in need of health care.
- 5.3 Arrange individual or group conferences with physicians, dentists, social workers, parents, or others, pertaining to the health of a child, whenever it is apparent that the parents are incapable of making needed arrangements themselves.
- 5.4 Consult and co-operate with public health officials, voluntary health agencies, health advisers, and others interested in the promotion of the health of the school child.
- 5.5 Report health problems of children to public health officials, whenever such information is helpful to the latter.
- 5.6 Participate, on invitation, in the planning and work of community health or child health councils.
- 5.7 Whenever the opportunity arises, inform civic, professional, and planning groups of school health problems.
- 5.8 Assist community health agencies in the making of surveys and conduct of research on pupil health needs.

Views on School Nursing

Margaret A. Cree, nursing consultant in school health for the California State Department of Public Health, stated in 1952 that the functions of the public health nurse in schools have changed considerably in recent years.

The public health nurse participates as a member of a group of specialized professional workers in all phases of the school health program, but her major activity is in health service. She is a member of the curriculum committee, enriching the teaching content to meet children's needs through her knowledge of individual, family, and community health. The public health nurse in the school situation also participates in numerous group activities, such as health workshops and teacher institutes. She is often a member of the health council within the school and the co-ordinating council of the community. In this capacity she participates in policy making and program planning.

The trend toward co-ordinated planning of all health programs in the community gives special emphasis to the health problems found by the nurse working among children in the schools. These health problems reflect those that are found in the family and the community at large.

Shifts in emphasis are also occurring in nursing functions within the school. Research studies indicate that one of the most productive activities in which the nurse engages is the teacher-nurse conference. This conference replaces the routine health examination. When teacher and nurse agree that a child is in need of some special attention, health examinations may be arranged and conferences with parents and others may follow.

Much nursing time is given to working with teachers, demonstrating techniques for vision screening, weighing and measuring children, and making observations of children for signs of illness. The nurse of today spends more and more time in counseling with teachers regarding the health problems of pupils. Nurse and teachers are making some home visits together when a health problem indicates that a joint visit may be helpful.

Often the nurse will have to assume leadership in obtaining an expression of medical policies for accidents and emergency illnesses. School policies regarding the emergency care of children should be approved by the local medical society in order that school personnel, nurses, and teachers may have some degree of protection when they act in emergencies.

The follow-up of absentees is often delegated to the nurse, largely because the majority of absences are due to illness. However, it is the school's responsibility to first ascertain the cause of absence and a policy should be decided upon with the school officials to determine why a child is absent before referring the matter to the nurse for follow-up.

One of the most significant contributions that the public health nurse makes is in her work with the families of school children, and a large portion

of her time should be available for this work. Unless the family is recognized and utilized as the basic sociological unit for health work with children, the health program is weakened.

Isolated classroom health talks, formerly a frequent activity of the nurse, are being replaced by health instruction on the part of the classroom teacher. In such a program the nurse generally serves as a resource person for the teacher.

Both advantages and disadvantages for generalized and specialized nursing service for schools can be cited. Satisfactory service has been provided under both systems. It is an accepted principle in school administration that what goes on in the school is the responsibility of the school administrator. When schools contract for health services from another agency, such as the department of public health, that agency is responsible for planning with the school administrator the type of health program which is in agreement with the philosophy of education and the needs of the children attending the particular schools involved.

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A School Nurse in Action

Jane B. Taylor and Mildred F. Wills report a case study of a school child that shows some of the functions of a school nurse.

A classroom teacher consulted the school nurse about a visual handicap possessed by a boy in one of her classes.

The nurse sent for the boy and made arrangements for the parents to take the former to an eye clinic. The family had no regular family physician. At the eye clinic it was suspected that the boy's visual difficulty was due to congenital syphilis. A blood test was strongly positive for this disease. A diagnosis of late congenital syphilis with interstitial keratitis was made and treatment for the disease was begun.

The boy was kept out of school until his acute eye symptoms had subsided. When he returned to school he was advised to wear dark glasses for a short period of time. The clinic physician reported fully to the school medical authorities and suggested that the boy could be returned to school after a certain period of treatment. It was recommended that the boy be placed in a sight-saving class and that he return to the eye clinic every ten days. As soon as inflammation in the eye subsided the boy had corrective glasses fitted.

The school nurse had another conference with the boy's teacher and explained the situation. Since there was no sight-saving class in this school, it was arranged for the boy to sit near the front of the room where the light was good. Plans were made for other children in the room to take turns reading aloud some of the lessons so that the boy could save his eyesight.

The school nurse visited the parents, but found that the nurse from the syphilis clinic had already induced them to report for treatment for syphilis.

Arrangements were made, however, for the boy's four-year-old sister to be examined.

The school nurse interested the parent-teacher association in purchasing eyeglasses for the boy as the family was too poor to pay for the needed glasses.

178***Duties of a School Nurse***

A committee of thirty persons, composed of school nurses, public health nurses, county school administrative personnel, and a school health consultant, agreed on the functions of the school nurse in Sonoma County, California, in 1954.

The committee concluded that the functions of the school nurse are multiple and diverse, depending upon the individual problems of a particular group of children, on varying circumstances, and on the environmental features of the individual school district. Within a framework of expected diversity, however, the committee felt that there are certain more or less standard functions which will probably apply to every school nurse. These functions are as follows:

1. The making of recommendations and budget for school nursing supplies, equipment, and facilities that are needed for the development of a sound school nursing program.

2. The securing of a thorough and adequate health history for each child who enters school. This history should be prepared by the parents, but it is an administrative responsibility of the nurse to make every effort to secure the history.

3. Participation in the arrangement of needed health examinations for school children; sometimes there may be active participation in the examination.

4. Participation in the vision screening of school children.

5. Co-operation or participation in the testing of hearing of school children. While the specific testing may be done by a trained audiometrist who is not a school nurse, there is still much responsibility for the nurse in carrying through on a case.

6. In-service training of classroom teachers for the making of daily health inspections of children.

7. Prompt isolation of children suspected to be suffering from communicable disease and the making of recommendations to the school administration on the disposal of such cases.

8. Checking of medical reports governing the readmission of pupils to school after illness.

9. The making of recommendations regarding emergency illness and accidents affecting school children. The nurse should make certain that a regular, routine procedure exists for such cases.

10. The training of teachers in the principles and practices of first aid. The rendering of first aid when this is pertinent.

11. Checking on the immunization status of school children, especially on entrance to school, and the making of recommendations to parents concerning immunization.

12. Checking on the dental health of school children periodically and co-operating with the dentist regarding recommendation to parents.

13. Referral of emotionally disturbed or mentally ill school children for psychological study and recommendations.

14. Promotion of better nutrition among school children and the making of recommendations regarding the need for medical or other examination on the part of malnourished children.

15. The keeping of school health records as required by certain legal regulations.

16. Follow-up of school children with health problems in a sustained effort to convince parents of the need for correction of defects or the securing of medical attention when such is needed.

17. Participation in the making of recommendations regarding welfare cases and the utilization of those social agencies in the community that are established to handle such cases.

18. Assistance to classroom teachers in the arrangement of learning experiences in health.

19. Education of parents regarding health problems of their children, in order that they may see the significance of such problems.

20. General education of the community regarding school health problems.

21. Regular attendance at faculty meetings.

22. Subscription to at least one professional journal in the field of nursing, education, and school health. (*Journal of School Health* is especially recommended.)

23. Periodic evaluation of the individual school nurse's participation in the school health program.

24. An annual discussion with the school administrator of each school in the district regarding problems and needs in the field of school health within his own school district.

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What the School Wants of Its Nurses

Marie Swanson, school nursing consultant of the National League for Nursing in New York City, reported in 1954 that all schools do not want the same thing of their school nurses.

The school administrator may want his nurse to work as one of his staff members who has a specific concern for health matters and who has a certain background of education and experience relative to her field of specialization.

The school administrator may expect the school nurse to reinforce the school physician's work in planning and executing a program of health supervision, examinations, and testing, and to develop and maintain a health record for each pupil. He may expect her to be personally responsible for initiating and carrying out a comprehensive plan for effective follow-up to secure whatever care is needed for pupils with health difficulties.

The administrator may see his nurse as the person who, because of her intimate contact with the parents of children, may be a source of information on the individual problems of pupils and on reactions of the families toward various school procedures. The administrator definitely depends on the school nurse to point out the needs of children which are not being met.

The administrator expects his nurse to keep him well informed in two different ways: on general health matters within the school and on specific facts regarding the health of individual children in school. The parent gets a fine sense of security and a justifiable feeling of confidence in the school's concern for his child when the principal can say, "Now I'll tell you just what happened."

The teacher looks to the nurse for specialized information about health and health procedures, illness problems in children and illness procedures, and for help with particular children. The teacher and nurse may work together on the choice of materials for health teaching, with the teacher deferring to the nurse's judgment on the authenticity of subject matter.

Physicians may want varying things from the nurse depending partly on their own roles. The full-time physician is in a position to outline what he wants and to take action to secure these things directly through his school nursing supervisor. The part-time school physician, working with a full-time school nurse, is in a different situation. He wants the usual physician-nurse professional relationship to function with respect for his prerogative to make all decisions based on medical judgment.

The pupil sees the nurse as a friend. Often a pupil will want of her a substitute for a lacking maternal love and affection. To many little children entering school for the first time, the school nurse may be the only adult that the child knows and it may be very important to him. He may have become acquainted with the school nurse through calls at his home concerning other children in the family or through the nurse's work with neighborhood children.

To a greater or lesser extent, each school relies on the nurse for effective co-operation with community agencies to secure needed services for pupils.

In 1952 a joint committee of public health nurses and school nurses participated in the preparation of a manual for school and community nursing

in Merced County under leadership provided by the County Health Department and the County School Department.

It was agreed upon by this group that in a community and school program the functions of the public health nurse are basically the same as those of the school health nurse, with one major distinction. This distinction lies in the fact that the public health nurse, being employed by the health department, has a major responsibility for the community at large, rather than primarily for the school and parents alone.

In teaching individuals to accept responsibilities for their own health, the public health nurse must work with adult groups and community organizations, as well as with schools, but this is also a function of the school nurse. The difference lies in the degree of emphasis on community versus school responsibilities. The emphasis in public health nursing must lie with the community rather than with the school, but this should not deter the nurse from participating in a co-ordinated school-and-community program.

Functions of the public health nurse may be defined in a school and community health program as follows:

1. To be a field representative working under directions of the public health officer on any specific health problem assigned by that person.
2. To keep public health nursing records up to date in the office of the County Health Department.
3. To report to both public health and school authorities on health problems involving school children which are discovered when the nurse works with home or community groups.
4. To interpret to school authorities the nature of health problems of children in terms of family or community conditions, based upon data from public health sources.
5. To interpret to parents and community groups the nature of health problems of children, based upon data from school authorities.
6. To place special emphasis upon health education of the parent when children of any age are found to be suffering from health conditions that can be corrected or ameliorated.
7. To participate in community health projects both in the regular line of duty and by accepting special assignments, but with a major purpose of health education.
8. To attend professional meetings and in-service training sessions of both public health and school nurses.
9. To assist parents, teachers, counselors, or others in making arrangements for the correction of remedial defects or other health conditions of both children and adults.
10. To contact local physicians for needed information pertaining to health problems of adults or children.

As stated in the preceding section, the functions of the school nurse and the public health nurse are basically the same, but because the school nurse may be employed by the Board of Education, there is a major responsibility for her to work in the school and its environment rather than in the community at large, although the latter is absolutely necessary if the health problems of children are to be handled properly. The distinction lies in emphasis rather than in difference of function, but this should not deter the school nurse from participating in a co-ordinated school-and-community health program.

Functions of the school nurse may be defined as follows:

1. To be a classroom and home representative of the school authorities (such as supervisor, principal, or superintendent) on any specific health problem assigned by such leaders.
2. To keep school nursing records up to date in the schools. This does not mean that the school nurse should perform the functions of a clerk. Health records, if possible, should be kept by school recorders in the regular and complete files of the pupils, along with academic and other records.
3. To report to both school and public health officials on health problems involving the home or community which are discovered through the school health experiences of the child.
4. To interpret to public health authorities the nature of health problems of school children, based upon data obtained from school records.
5. To interpret to parents and community groups the nature of health problems of children, based upon data from school or public health authorities.
6. To place special emphasis upon health education of the parents when children of school age are found to be suffering from health conditions that can be corrected or ameliorated.
7. To participate in community health projects as a representative of the school.
8. To attend professional meetings and in-service training sessions of both school and public health nurses. Joint attendance at such meetings is of great significance in the development of a co-ordinated program.
9. To assist classroom teachers, parents, counselors, or others in making arrangements for the correction of remedial defects or other health conditions of school children.
10. To contact local physicians or other health authorities for needed information pertaining to health problems of school children.
11. To assist classroom teachers in the development of learning experiences in health in keeping with a co-ordinated health instruction program for which classroom teachers have the primary responsibility.
12. To participate in teacher conferences at least once each year regarding health problems of each child in the teacher's classroom.

13. To educate teachers and supervisors in recommended methods for first aid and emergency care of school children.

14. To assist in planning of a school health calendar for vision testing, testing of hearing, and other health services required by school law.

15. To make home calls regarding various health problems of school children.

16. To assist counselors or other school personnel to interpret the child's behavior through a better understanding of his personal and family health problems.

17. To co-operate with nutritionists, home economics personnel and lunch-room directors for promotion of better nutrition among school children.

18. To participate in school and community health council meetings to promote a better understanding of community and school health problems.

19. To co-operate with parent-teacher associations, especially with child health committees, for the development of a better program of school and community health.

20. To assist in diagnostic clinic or other community health services arranged in or through the school resources.

Chapter XI

Alcohol and Narcotics Education

It was reported in 1952 that at present all states require instruction about alcohol in the elementary grades and thirty states specify instruction in the secondary schools. In six states a full-time supervisor of alcohol education is employed by the State Department of Education.

There has been increased interest in and emphasis on alcohol instruction since 1943. A number of state manuals on this subject have been revised, the topic has been considered in an increasing number of teacher workshops, and increased public attention to the problem of alcohol appears to have had definite effects upon the teaching profession. A greater supply of educational materials on the subject of alcohol exists today than ever before.

The National Committee for Education on Alcoholism was founded in the United States in October 1944. This committee is now known as the National Committee on Alcoholism and has reached maturity of independence as a public health organization. The committee's educational work rests on three concepts: that alcoholism is a disease and the alcoholic a sick person; that the alcoholic can be helped and is worth helping; and that this problem is a public health responsibility.

International attention was given to the problem of alcohol education when a World Health Organization expert subcommittee met in Geneva in December 1950 to recommend that prevention and treatment of alcoholism should become a regular function of public health departments and that the disorder should be treated on medical and scientific lines.

It was pointed out from a national survey in 1945 that the social aspects of the alcohol problem had received relatively little attention in school programs on this subject. In educational work attention has been almost exclusively directed toward the personal aspect of alcoholism on a moralistic basis. The need for education about alcoholism against a broad social background has been emphasized.

It has been stated that there is only a limited place for formal instruction about alcoholic beverages in the elementary grades from one through six. It is recommended that information about alcohol problems should be included in grades seven and eight in health and safety units, offered in science, social studies, or health courses. Opportunities for social or community aspects of the problems of alcohol are available in grades nine, ten, eleven, and twelve. According to some experts, the last two years of high school offer the most promising areas for classroom study of the problems of alcohol. For many students the use of alcoholic beverages becomes a realistic question for the first time at this period in their lives.

A study of the drinking habits of high school students in Utah shows that about 20 percent of the girls and 44 percent of the boys sometimes drink alcoholic beverages. The majority of students indicated that social motivations were the primary reasons for their drinking. In this study the average age at which first drinking began for both boys and girls was 14.5 years. It was concluded from this investigation that education on alcohol problems should be started in junior high school rather than in senior high school.

Alcohol education in various schools and parts of the country has been described. Sources of scientific information for alcohol education have been enumerated.

Whether to teach moderation or abstinence in respect to alcohol is a much debated question. One authority feels that the only ethical thing to do is to present the facts properly, honestly, and thoroughly and let the student make the decision about drinking.

Within the past decade it has been reported from various parts of the country that narcotics addiction among teen-agers has increased substantially. Estimates of teen-age addicts in New York City range from about 5,000 to 15,000. In a New York study of 167 cases of drug addiction it was found that one fourth of the drug users were in the schools. The largest number of users was found among the sixteen-year-olds and the rate of narcotics usage was much higher in vocational than in academic high schools.

The Federal Grand Jury of Detroit, Michigan, reported in 1951 that young people ranging in age from fourteen to twenty-one years were found to have become confirmed users of heroin, morphine, and cocaine. It was reported from this study that these young people resorted to thievery, shoplifting, prostitution, gambling, and other measures in order to obtain money for narcotics. The Grand Jury recommended heavier penalties for those involved in illegal sales of narcotics, expansion of the police force dealing with the enforcement of narcotics laws, increase of federal funds devoted to this problem, greater alertness by parent-teacher organizations and other civic groups in the detection of centers for dispersal of drugs, and a greater responsibility, in general, for civic authorities in the control of narcotics activities.

In New York City a special school for young narcotics users was opened during September 1952. This is the first school of its kind in the country. In April 1952 Governor Thomas E. Dewey of New York signed three bills aimed at narcotics control in the state of New York. One of the bills required public high schools and private secondary schools to teach the effects of habit-forming narcotics to all students above the eighth grade. State teachers colleges were also to be required to provide a similar course of instruction.

Raymond G. McCarthy, M.A., M.Ed., of the Yale Plan Clinic, Yale University, reported in 1952 that thirty-three states have a law or regulation

requiring health instruction in the secondary schools. Health instruction in the public schools originated in many states after the passage of laws requiring teaching about alcohol and narcotics. The first alcohol instruction law was passed in 1858 and is still in force. At present all states require instruction about alcohol in the elementary grades and thirty states specify instruction in the secondary schools.

In this study a questionnaire was sent to the superintendent of instruction in the forty-eight states and certain other places such as the Canal Zone and Guam. The same questionnaire was also mailed to directors of alcoholism commissions in certain states. The questionnaire sought information regarding some description of the scope of instruction in alcohol at the different grade levels. Information was also sought on the activities of any full-time state supervisor of alcohol education that might be responsible for this program.

Returns were received from thirty-five states and some of the other localities such as Alaska, the Canal Zone, and the Virgin Islands.

In six states a full-time supervisor of alcohol education functions on the staff of the state department of education. In another state, a supervisor is assigned half time to health and narcotics education.

The state supervisors of alcohol instruction were found to be qualified by training and experience to discharge their responsibilities. As of 1952, all of these state supervisors had attended the Yale Summer School of Alcohol Studies. Because they are engaged full time in this problem they have an opportunity to devote their entire efforts to alcohol instruction, in contrast to supervisors in other states who have more diversified responsibilities.

Those states having full-time state supervisors of alcohol education were as follows: Alabama, Florida, Mississippi, South Carolina, Ohio, Oregon, Vermont, North Carolina (Rowan County), Montana, and New York (Western New York Committee for Education on Alcoholism).

The state supervisors have been especially active in preparing materials for the use of both teachers and students. They work consistently with teacher committees in organizing units of work, and act as consultants to teacher training institutions. Integration in various subject fields is encouraged.

Directors of the survey were impressed with the increased interest and emphasis on alcohol instruction since 1943. A number of state manuals on this subject have been revised, the topic has been considered in an increasing number of teacher workshops, and increased public attention to the problem appears to have had definite effects upon members of the teaching profession in respect to this problem.

An adequate amount of alcohol education materials already appears to be available. In fact, a greater supply acceptable to schools now exists than at any time in the past. An increasing number of teachers have had special training in alcohol problems. More students are aware of alcoholism as

a health problem associated with personality deviations than at any time in our history. The number of courses which are being introduced in high schools that center around the total development of students is increasing consistently. Incorporation of work on alcohol in these courses appears to be readily achieved if and when teachers understand the relationship of such teaching to the field in which they work.

On the other hand, there is a definite lack of acceptable films and film strips suitable for alcohol education, according to these investigators.

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Challenges for Alcohol Education

Joseph Hirsh, associate director of the Research Council on Problems of Alcohol in New York City, says that alcohol education holds three basic challenges for educators in general and health educators in particular.

First, alcohol education is a field in which there is an ever-increasing body of knowledge which has been relatively untitled by trained, objective persons. Implicit is the solution of a complex sociomedical problem, that of problem drinking.

Second, although it is required by law in practically every public school in the United States that alcohol education be taught, teachers are little prepared to render such instruction. For want of adequately trained personnel and of instructional materials for teachers and students, departments of education in many cases are forced to use restricted personnel and materials because this is all they can get.

Third, many instructional materials in the field of alcohol education are inadequate in content, haphazard in presentation and interpretation, and of limited scientific value.

Mr. Hirsh believes that health educators and health authorities have a continuing responsibility to present the problem of alcohol education objectively and completely. Anything less will tend to perpetuate error and falsehood and delay an intelligent solution of the problem by prolonging halfhearted social action and wasting public funds which are presently being used for medical and educational programs in this field.

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Education on Alcoholism

Forbes Cheston, secretary of the Interim Committee on Alcoholism, London, England, points out that the National Committee for Education on Alcoholism was founded in the United States in October 1944. It is now known as the National Committee on Alcoholism and has reached maturity of independence as a public health organization.

This committee was formed because of general ignorance about alcoholism

and it was felt that unless people learned at least some of the facts regarding this problem, nothing at all would be done about it.

The committee's educational work rests on three concepts: (1) that alcoholism is a disease and the alcoholic a sick person; (2) that the alcoholic can be helped and is worth helping; and (3) that this is a public health problem and therefore a public responsibility.

In the years since 1946 the function of the National Committee has changed from one of stimulation to one of guidance. By 1949 the number of affiliated committees had risen to over fifty and clinical and hospital facilities and information centers on alcohol had been established in many cities. By this time also there were twenty-two state-sponsored programs on alcoholism, developed from the work and guidance of the National Committee.

In December 1950 a World Health Organization expert subcommittee on alcoholism met in Geneva to consider this public health problem. This committee recommended that the prevention and treatment of alcoholism should become a regular function of public health departments and that the disorder should be treated on medical and scientific lines. Treatment facilities and advisory, educational, and other services should be provided, according to the committee.

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Alcohol Education in the School

Anne Roe called attention to the fact that in 1945 alcohol education was required by law in all the elementary schools and in most of the high schools in the United States. A study of what the schools are doing in alcohol education revealed the following points.

The most commonly included single aspect was a discussion of the general subjective effects of alcohol. Usually the statement was made that alcohol chiefly affects the higher mental processes of reasoning, judgment, and so on, and that this effect is accompanied by clumsiness and lack of co-ordination.

The next most common inclusions in the textbooks concerned the immediate physiological effects of alcohol and its eventual effects on bodily structures and functions. These discussions almost without exception made no qualifications with regard to the amounts of alcohol consumed and may lead to serious misrepresentations.

It was generally correctly explained that alcohol is a depressant rather than a stimulant; but no attempt was made to explain the effects that give the appearance of stimulation. The habit-forming properties of alcohol were almost invariably likened either directly or by implication to those of narcotics, such as morphine or cocaine. This comparison is physiologically incorrect.

The social aspects of the alcohol problem received relatively little attention, with one exception. This exception pertained to the relation between

alcohol and traffic accidents. The majority of the texts did a very good job of explaining why drinking may lead to increased traffic accidents.

There was, as a rule, no discussion of public responsibilities in the matter of education, control, or care of alcoholics. An even more startling omission was the failure of all but two texts to mention treatment for alcoholism. In most texts it was clearly implied that once an alcoholic, always an alcoholic.

The problem of alcohol has two chief aspects, social and personal. In educational work attention has been almost exclusively directed toward the personal aspect on a moralistic basis. Drinking is, in a sense, a moral issue; but this is only one aspect, and very often a minor one. Little is to be gained by treating alcoholism as an isolated and specific moral problem. The issue is a much larger one.

We have definite social problems in respect to the alcohol addict and the chronic alcoholic. These are public health problems; they exist on such a large scale that private institutions or organizations are inadequate to cope with them. We have inadequate provisions for the treatment of alcoholics. We shall not get proper public provisions until people are educated to the necessity for them.

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Alcohol Education in the Public Schools

Raymond G. McCarthy and Edgar M. Douglass stated in 1948 that instruction about alcohol can become an effective part of a comprehensive program in the secondary school curriculum.

The authors believe that such instruction can contribute to the total learning process of young people in a manner which will strengthen the probability of a wholesome and emotionally satisfying development of the individual. This will come about, however, only after administrators and teachers acquire an understanding of the social and psychological principles underlying widespread use of alcoholic beverages, and develop methods of instruction so that young people will be motivated to relate to their personal lives the factual data and the principles offered for realistic discussion in the classroom.

The key to effective instruction about alcohol in the secondary school is to be found in the teacher. Many teachers avoid controversial issues in the classroom because of difficulties involved in presentation and the repercussions which may come from the community. Materials for class use are not always easily obtainable. It has been demonstrated, however, not only that controversial issues can be taught in public schools, but also that they must be taught if the school is to present a program of education consistent with the philosophy which underlies its role as a necessary social institution in a democracy.

The authors believe that in the elementary grades from one through six

there is only a limited place for formal instruction about alcoholic beverages. Teaching should be confined at these levels to such simple health measures as abstinence from eating or drinking any substance the nature of which is doubtful and which has not been approved by a responsible adult in whom the child has confidence.

With the traditional organization of subject matter, it seems desirable that information about alcohol problems should be included in grades seven and eight in health and safety units. These units may be offered in the science, social studies, or health courses, and taught as an integral part of one or more of these subjects.

In grade nine attention may be centered upon the social or community aspects of the problems of alcohol. This falls normally into grade nine civics or social studies courses. In some schools the courses in general science and health may be adapted for a unit on alcohol. If biology is offered in this grade a unit on the nature and effects of alcohol may be expanded as part of the work on narcotics and drugs.

A unit on nutrition is suitable for study as part of the home economics course in grade ten, which can be developed more extensively in grades eleven and twelve.

The last two years of high school work offer the most promising areas for classroom study of the problems of alcohol, according to these authors. For many students the use of alcoholic beverages now becomes a realistic question for the first time. Problems of democracy, sociology, consumer economics, home economics, advertising and sales, American history, courses in personal problems and development, instruction in automobile driving, and other courses may be highly suitable for alcohol education.

The Use of Alcoholic Beverages Among High School Students in Utah

Arthur D. Slater, of the Utah State Board on Alcoholism, reports a questionnaire study of the prevalence of drinking among 1,177 students in grades ten and twelve in five high schools in different parts of the state of Utah.

It was found that 20 percent of the girls and 44 percent of the boys reported that they sometimes drank alcoholic beverages. At least 32 percent of the girls and 59 percent of the boys who reported that they drank had at some time indulged in drinking under circumstances presumably unapproved by parents, such as in automobiles.

The majority of students checked social motivations as reason for drinking, but 17 percent thought drinking might aid in forgetting troubles and 7 percent thought it might have physical benefits.

More preferences were checked for beer than for whisky or wine, a possible reflection of experience rather than taste.

The average age at which first drinking for both boys and girls began was 14.5 years, but a substantial number of pupils reported that they had been introduced to alcoholic drinks at or before the age of twelve years.

It was concluded from this study that education on alcohol problems should be started in junior high school rather than in senior high school and that further exploration of the drinking practices and attitudes of adolescents is required in order to guide professional educators for more effective alcohol education.

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Alcohol Education in the Secondary Schools

In 1951 a panel of experts, in discussing problems of alcoholism as related to health education in the secondary schools of the United States, pointed out that in New York the State Department of Education had become very receptive to the idea of appointing one or several people for special training in alcohol education.

One panel member pointed out that teachers must be well informed and have an objective viewpoint of the problem of alcoholism before they can pass on the information to others.

A teacher at Kenmore Senior High School reported on alcohol education. At this school basic reasons why people become alcoholics are discussed without indication that alcoholism is morally good or bad. It is stressed that problem drinking is an adjustment problem and has nothing to do with mental ability.

The function of the guidance worker in alcohol education was explained as being primarily that of assisting teachers to gather information about the children they are teaching. Information gained from case studies of children with school problems often reveals a history of alcoholism in the family. Often it is helpful for the teacher to have this information in working with the pupil. One of the chief functions of guidance personnel, according to this panel member, is to identify those pupils who may become problem drinkers. The use of certain tests and interviews, home visits and observations of youngsters in school situations may give indications of the future. If guidance workers can identify these children, then education may help to prevent them from developing into problem drinkers. The guidance worker also has a relationship to pupils who are already problem drinkers at the secondary level.

The function of guest speakers on the problem of alcoholism was discussed by panel members. Members of Alcoholics Anonymous have spoken to high school classes and have been very effective because of the drama of personal experience.

One panel member felt that alcohol education beginning as late as the tenth grade was a bit late. It was felt that an approach to this problem involv-

ing attitudes and mental health should be started very early in the elementary school although actual facts and scientific knowledge regarding alcoholism would be more suitable for the seventh grade or later. One panel member reported from a survey made in several schools in New York State that social drinking in the high school among girls had started between the ages of eleven and seventeen years.

In respect to student interest in the problem of alcohol education the following quotation from a student paper may be enlightening: "The subject, alcoholism, is one of interest because it is one of high school's problems today. Those out-of-town games when a good many students brought bottles and proceeded to get drunk will always spoil my memories of high school, because attendance at the football games was part of high school life. I realize that there are many boys and girls in high school who are in the preparatory stages to becoming alcoholics."

It was stressed that alcohol education should be based upon the concept of alcoholism as a disease and that the effectiveness of instruction in this area depends a great deal upon the person doing the teaching.

188 Sources of Scientific Information for Alcohol Education

Mark Keller and Vera Efron, of the Yale Center of Alcohol Studies, indicated in 1952 that a variety of resource materials was available to anyone needing scientific information in the field of alcoholism.

Some of the journals that might be most helpful to teachers in the field of alcohol education are as follows.

1. *Quarterly Journal of Studies on Alcohol*. Journal of Studies on Alcohol, Inc., New Haven, Connecticut, \$5.00 yearly.
2. *British Journal of Addiction*. Wilding and Son, Ltd., London, England. Subscription: 10s. 6d.
3. *Scientific Temperance Journal*. American Issue Publishing Company, Westerville, Ohio.
4. *Alcoholism—A Treatment Digest for Physicians*. New Jersey State Department of Health, Division of Preventable Diseases, Trenton, New Jersey.
5. *The Connecticut Review on Alcoholism*. Connecticut Commission on Alcoholism, Hartford, Connecticut.
6. *Utah Alcoholism Review*. Utah State Board on Alcoholism and the Utah Committee on Alcoholism, Salt Lake City, Utah.
7. *The Grapevine*. The Alcoholic Foundation, P.O. Box 328, Grand Central Annex, New York City.

Keller and Efron also point out that a number of journals are available which they classify as organs of propaganda or nonobjective education. Al-

though the authors consider these as sources of nonscientific materials, they point out that this category includes the largest number of publications which concern themselves especially with alcohol problems. The periodicals are published by organizations which explicitly represent one side in the "abstinence versus drinking" controversy. The authors state that these journals are important documents for the information of scientists concerned with the phenomenology of attitudes and movements in respect to alcohol problems.

Some of the journals that fit into this category are as follows:

1. *Listen*. American Temperance Society, Mountain View, California.
2. *National Temperance Digest*. The National Temperance League, Inc., Chicago, Illinois.
3. *The Union Signal*. National Women's Christian Temperance Union, Evanston, Illinois.
4. *The Voice*. Board of Temperance of the Methodist Church, Washington, D.C.
5. *The International Student of Liquor in Life Today*. The Intercollegiate Association for Study of the Alcohol Problem, Columbus, Ohio.
6. *The Foundation Says*. The American Businessmen's Research Foundation, Chicago, Illinois.

The authors have also indicated that a considerable amount of information of a statistical and technical nature is contained in numerous periodicals published by or for the alcoholic beverage industry. Examples of such current publications are as follows.

1. *Brewer's Digest*. Siebel Publishing Company, Chicago, Illinois.
2. *The Monopoly State Review*. Liquor Publications, Inc., New York, New York.
3. *Tap and Tavern*. A. M., Inc., Philadelphia, Pennsylvania.
4. *Wines and Vines*. Wienand, San Francisco, California.

The *Quarterly Journal of Studies on Alcohol*, through an annual subject index, gives access to current scientific materials and the *Classified Abstract Archive* gives access to a large accumulation of scientific materials. Both of these publications on bibliography are produced at the Yale Center of Alcohol Studies in New Haven, Connecticut.

Andrew C. Ivy, Ph.D., M.D., says that the degree of ignorance of the facts regarding alcohol by high school and college students is extraordinary.

Whether to teach moderation or abstinence is a much debated question. He feels that the only ethical thing to do is to present the facts properly, hon-

estly, and thoroughly, and let the student make the decision. The student will make the decision anyway. However, if you feel that modern youth should be taught and encouraged to drink in moderation, Dr. Ivy wishes to know how you answer these questions.

1. Does anyone start out to be an alcoholic?
2. Do the merits of alcoholic beverages taken in moderation warrant the one-in-ten or perhaps one-in-five chance of becoming an alcoholic?
3. Can a person be certain when he starts drinking moderately that he will never become a drinking driver or an alcoholic?
4. Do alcoholic beverages meet a real need of man so that the self-drugging of a healthy brain is desirable?
5. Is it necessary to drink socially in order to get along in life? If so, is it right for this to be necessary?
6. Is it good economics to spend money for alcoholic beverages instead of for other goods and services, such as education, charity, and wholesome recreation?
7. Has the teaching of moderation been shown to prevent intoxicated persons from driving motor vehicles?
8. Has such teaching been shown to prevent the evils of alcoholic intoxication and alcoholism?
9. Are human nature and the nature of alcohol such that moderation can be maintained?
10. Is it possible to teach and maintain moderation when the alcoholic beverage industry, by means of advertising and propaganda, attempts to change the abstainer to an occasional drinker, and the occasional drinker to a steady drinker?

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Drug Addiction in New York City

An article in the *New York World-Telegram and Sun* of May 29, 1951, reported that five teen-age dope addicts had died in previous months from the use of narcotics, and that estimates of the number of teen-age addicts in New York City at that time ranged from 5,200 to 15,000.

Police officials indicated that Manhattan had about 2,000, Brooklyn about 1,500, the Bronx about 1,000, and Queens about 700 addicts among teen-agers.

One teen-ager admitted that a friend gave him heroin at the age of thirteen, and that he knew from twenty-five to fifty teen-agers in his own neighborhood who used dope. He also admitted lying and stealing in connection with his drug addiction and said he knew others who robbed stores, held up taxi drivers, and stole pocketbooks in order to get money for the purchase of narcotics.

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Narcotic Addicts in New York Schools

Harold Jacobziner, M.D., director of the Bureau of Child Health, New York City Department of Health, reported in 1953 that narcotic usage among the school age population in New York City reached its peak in May 1951.

Between September 1950 and February 1952 the city's school health service uncovered 167 cases requiring treatment. These represented about one fourth of the drug users in the schools, according to Dr. Jacobziner.

The largest number of users was found among the sixteen-year-olds, and the rate of narcotic usage was much higher in vocational than in academic high schools.

Though every racial, ethnic, socioeconomic group and creed was represented, there was a marked concentration in critical areas inhabited by individuals or groups subjected to many deprivations and discriminations, and many came from disrupted and disharmonious homes.

Total treatment should not be limited to medical treatment and follow-up but should aim at the rehabilitation and re-education of the user in a drug-free environment, with full preparation for return to his former environment. One effective way of preventing the psychological ills leading to addiction lies in a comprehensive program of slum clearance, good sanitation, good nutrition, good housing, and good parent-child relationship, bolstered by a program of good physical and mental health.

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***Report of the Federal Grand Jury at Detroit
on Drug Addiction***

The Federal Grand Jury at Detroit, empaneled to inquire into and investigate the use of narcotics by teen-agers in this large Michigan city, concluded in 1951 that young people, ranging in age from fourteen to twenty-one years, were found to have become confirmed users of heroin, morphine, and cocaine.

It was also discovered that after becoming enslaved to narcotics, these young people resorted to thievery, shoplifting, prostitution, gambling, and other measures in order to obtain money for dope.

It was found that school children of the teen-age group had accepted the smoking of marihuana as the daring thing to do, but that addiction to this drug led to even more serious addiction to other drugs. In some instances, these young people were able to obtain marihuana in stores located across the street from schools.

The Grand Jury recommended heavier penalties for those involved in illegal sales of narcotics, expansion of the police force dealing with enforcement of narcotics laws, increase of federal funds devoted to this problem, greater alertness by parent-teacher organizations and other civic groups in

the detection of centers for dispersal of drugs, and a greater responsibility, in general, for civic authorities in the control of narcotics activities.

The Grand Jury was especially impressed by the evidence of the moral degradation of the individual and the disintegration of the family in cases of addiction to narcotics.

193 *Narcotic Addiction in High Schools*

In addition to New York City, where, it is estimated, the traffic in street sales of drugs amounted to about \$100,000,000 in 1951, eight cities were reported as showing alarming increases in illegal narcotics sales. These eight cities were Philadelphia, Detroit, Chicago, St. Louis, New Orleans, San Francisco, Washington, D.C., and Baltimore.

The superintendent of schools in New York City testified in a state narcotics inquiry that about one of every two hundred high school students in that metropolitan area used habit-forming drugs. A misdirected sense of adventure appeared to be the source of most beginning addiction.

194 *Narcotics School in New York City*

A special school for young narcotics users was opened during September 1952 in New York City. Known as Public School 619, the school can accommodate 250 youths. It is the first of its kind in the country.

The new school is housed in a building directly opposite a hospital. It is the fourteenth of the city's schools for socially maladjusted children. The schools are not punishment centers. Children attending these schools are not mentally retarded, but rather have not been able to adjust to a normal school situation.

There are no rigid courses of study in these schools, nor is there a time limit set for their completion. Instead, emphasis is put on training the child to work with others while at the same time developing individuality.

195 *Narcotics Education in New York*

On April 3, 1952, Governor Thomas E. Dewey signed three bills aimed at narcotics control in the state of New York.

One of the bills required public high schools and private secondary schools to teach the effects of habit-forming narcotics to all students above the eighth grade, with the program varying according to local needs.

State teachers colleges will be required to provide a similar course of instruction.

Chapter XII

Mental Health in Schools

It has been stated that a school program for the improvement of mental health should have two principal targets in mind: the teacher and the pupil. The teacher should be viewed as a person as well as an instructor, and the pupil should be thought of as a future parent as well as a child.

Organized programs in mental health have been reported from a number of different communities, including New York City and Los Angeles. These programs represent a broad effort to improve the emotional welfare of the child as a basis for more effective education.

The Committee on Preventive Psychiatry of the Group for the Advancement of Psychiatry gave acclaim in 1951 to four projects in the field of mental health. The Bullis Project in Delaware, the Force Project at the Toms River High School in New Jersey, the Ojemann Project at the State University of Iowa, and the Forest Hill Village Project in Ontario, Canada, were cited as being outstanding examples of teaching methods aimed at developing a better understanding of emotional health on the part of the school child.

A small study shows that participating leadership is the most effective method for changing attitudes of a group and that this type of learning has more meaning and more interest than many of the traditional types of teaching methods.

A study by 23 teachers of 810 elementary school children showed that the former believed that about 8 percent of the school children were likely sooner or later to have serious problems of adjustment and to need special assistance.

Attention has been called to the value of pencil and paper drawing tests for securing information concerning the emotional, personality, and developmental status of school children.

A military study of illiteracy may have considerable significance for the field of education. Two groups of about 1,400 illiterates were analyzed and compared with comparable groups of men who could read and write. It was found that illiteracy was often diagnostic not only of mental deficiency but of various personality disorders as well. It was concluded from this study that out of every group of 100 illiterates inducted into military service that about 15 would be given neuropsychiatric discharges before their military training programs could be completed and that three more would be neuropsychiatric casualties by the end of the first year of service.

On the more favorable side is a Massachusetts study of 207 mentally retarded boys. This investigation showed that less than 25 percent had appeared in court and that many of the mentally retarded boys were able and willing workers. It appeared that these mentally retarded boys were a self-respecting

group and contributed something of value to society by their industrial efforts.

A number of studies suggest that retarded readers may present a complex problem involving physical impediments, emotional distress, or inadequate teaching methods. At the Children's Psychiatric Service of the Johns Hopkins Hospital it was found in one investigation of thirty children with reading difficulties that twenty-nine of the children were insecure, restless, emotionally ill persons and that their reading disabilities were but a small part of the total picture of their maladjustment. Although the poor reader may have a deficiency of intellect, he deserves careful study in respect to the possibility of impaired hearing, poor vision, brain damage, emotional frustration, and other factors. One physician has called special attention to strephosymbolia, a condition found in ambidextrous persons who do not have a dominant half of the brain. Children with this condition need special teaching in order to learn to read adequately.

A study of forty-three children with high intelligence showed that the success or failure of the individual child depends upon factors other than his intelligence. One of the problems created by superior intelligence in a child is based upon a poor adjustment to his group. A superior child may learn his lessons quickly and become bored with school, after which he may get involved in mischief. Clever or brilliant remarks may attract attention from others and develop an unwholesome desire for the center of the stage on the part of the child with high intelligence. The superior child may dominate children of his own age but be rejected by older and larger children whose interests fascinate him and challenge his ability.

The effects of anxiety on attention, learning, retention, memory, and thinking have been studied. It has been shown that anxiety can be spread from one person to another, principally through sound. In one investigation of 185 persons of superior intelligence it was found that 72 failed tests in the presence of anxiety but performed well after anxiety had subsided. It was concluded from this investigation that in some people anxiety can have a far-reaching and destructive effect upon the power of reasoning. On the other hand, other studies show that relaxation produces favorable results in terms of memory and learning.

A study at the University of California suggests that personal interest in a student has a favorable impact upon his learning. According to this study, students with tensions and a greater need for affection and praise are most apt to be helped by personal interviews with instructors so far as performance on examinations is concerned.

Studies with medical students suggest that the teaching methods employed will be related to the results obtained. Classroom procedures which follow the basic principles of psychotherapy and allow for a relationship between student and teacher will result in greater educational achievements, according to one study.

A study of five hundred delinquent boys as compared to five hundred nondelinquent boys shows that the former generally had poor family relations and received little love from their parents. They also clashed frequently with other people and were highly assertive, defiant, suspicious, destructive, and impulsive. The delinquent boys had turbulent personalities, were adventurous, extroverted, suggestible, stubborn, and emotionally unstable.

A Massachusetts study suggests that the misdeeds of youth are so frequent that even a moderate increase in the amount of attention paid to them by law enforcement authorities could create the appearance of a delinquency wave without there being a slightest change in adolescent behavior. Juvenile court statistics thus do not appear to be very useful as an index of the behavior of children. It has been said that the education of problem children requires a broader basis than that of mere intellectual development. These children often have warped personalities, and their feelings and attitudes are more important than their academic attainments.

One authority states that children cannot be socialized without a discerning use of punishment, and that a society cannot exist without sanctions of punishment. To be effective, however, punishment must be used in a constructive manner and according to certain basic principles that favor desirable development of the personality.

Within recent years there has been substantial evidence to indicate that the emotional problems of children and their misbehavior may be due to a variety of factors such as brain damage, inflammation of the brain, and head injuries, rather than deficiencies due to parental mismanagement. In one study of fifty children who developed inflammation of the brain as a complication from a variety of children's diseases, it was found that personalities were markedly affected for the worse.

A project in St. Louis, Missouri, was reported in which two groups of mothers of problem school children were given psychiatric assistance in individual interviews and group meetings in the school. Marked improvements in the behavior of the problem children occurred following this program of training the mothers. In Dearborn, Michigan, a school for delinquent parents was started in 1944. Records show that most parents are willing to learn how to make greater contributions to the emotional welfare of their children. Subjects discussed in these classes include general family health, specific child health, family finances, family recreation, home economics, dietetics, house-keeping, child psychology, child guidance, care of the sick, and problems of youth.

Various studies show the importance of family background in emotional disturbances of the individual.

Psychiatric services for both elementary school pupils and college students have been reported. Nonintellectual factors related to academic achievement in college include maturity and seriousness of interests, awareness of and

concern for other persons, a sense of responsibility, dominance, persuasiveness, self-confidence, motivation to achieve, and the need for achievement.

196

Mental Hygiene in the Schools

Alan Chapman, M.D., of Minneapolis, said in 1949 that there are a vast number of ways in which a society's mental health may be improved, but in a democracy the most basic of these and the one which must carry the leading role is found in our school systems.

A school program for the improvement of mental health should have two principal targets in mind: the teacher and the pupil. The teacher should be viewed as a person as well as an instructor, and the pupil should be thought of as a future parent as well as a child.

The first step is to *begin improving conditions of work and community living for teachers*. Teachers should be paid salaries befitting their education and station in life; they should be free to indulge in any of the petty vices which are ordinarily accepted without comment in the average respectable citizen of the community; they should have a powder room in the school building where they can smoke during free periods if they wish; they should be free to go to public dancing places and night spots when they choose; they should be allowed to marry without losing their position; and they should be relieved of carping, hypercritical, supervisory visits from specialists who surrendered their humanity a generation or so ago to get out of the grueling classroom.

The second proposal with regard to teacher mental health is that *a system be set up to determine, before matriculation in a professional training school for teaching and before employment in a school system, which are the healthiest and most constructive personalities among the applicants*.

We must appraise the teacher's personality from the standpoint of its effect upon children's mental health just as seriously as we judge her physical fitness to be in daily contact with children.

A third proposal regarding teachers is that *they should be instructed in the teaching of principles of mental health*. There should be instruction in the principles of mental health as they are applied to oneself, and to one's children, but at present teachers are not prepared to give this instruction.

Every school should have a workable system of accumulating pertinent information about each individual child so that his needs may be quickly sensed and provided for as he passes from one teacher and one school to another. The form or folder which contains such information is often referred to as a "cumulative record." Such a record can and should be readily available to every teacher under whom the child works.

The cumulative record should contain:

1. Personal identifying and family data.

2. Physical health data, such as visual and auditory acuity, handicapping chronic diseases or defects, and nutritional status.

3. Intelligence test results based on an individual intelligence test given to each pupil at the kindergarten or first grade level with periodic checks on group intelligence every few years.

4. Objective achievement test scores in tool subjects such as reading, spelling, and arithmetic. These should be given at the end of each school year until a competency in the tool subject has been attained.

5. Record of subjects previously studied and grade obtained on each.

6. Personality data giving information, gathered by each preceding teacher, relative to the child's interests, special abilities and disabilities, personal peculiarities, and ways in which his co-operation and best effort are obtained.

197

Mental Hygiene in School

Evelyn D. Adlerblum, of New York City, reported in 1947 on a mental hygiene project that had been in process at Public School 33, Manhattan, for over three years. This school is located in an economically unfavored section of the city, with high infant mortality and tuberculosis rates. Between 50 and 60 percent of the children came from homes broken by divorce, desertion, and war casualties. The program was centered around the following factors.

1. *Home records.*—At the beginning of the year, the mental hygiene worker took a developmental home record of each new child enrolled in the morning kindergarten or the first grade. The average interview with the parent took about twelve minutes.

2. *Observation of children.*—During the first month of the term, teachers of the kindergarten and the first grade got acquainted with their children. The project worker also observed in the classrooms. At the end of this time, the teacher of each class and the worker together drew up a list of children who showed a need for help in adjusting to school, and who might profit by an intimate small-group experience.

3. *Purpose of group work.*—The group work was twofold in purpose. In the first place, it was intended to help children directly. Its second purpose was to serve as a guidance procedure for giving teachers additional understanding of children.

4. *Group sessions.*—Group work was usually done with five children, who met for one-hour sessions. This number of children, arrived at after experimentation, was small enough to permit ample interaction among the children, while the odd number allowed for a shifting of grouping without setting pairs as a pattern.

5. *Work with the teachers.*—A variety of related guidance procedures were used in working with teachers. This included individual conferences, sum-

many reports on students, visits to other schools, and even special courses for the teachers.

6. *Work with parents.*—A period was set aside each week when individual parents of children in all grades could come for consultation about their children. Among the problems brought in by parents were those which pertained to lack of obedience, fighting with other children, timidity, and grade placement.

7. *Physical disabilities.*—Relationships between physical and emotional handicaps were patent. Some children came into school with diagnosed disabilities for which treatment had kept them away from the normal life of society which develops social maturity.

8. *Broken homes.*—In a neighborhood in which well over half the children came from broken homes, the school played an especially supportive role to the many emotionally vulnerable children.

9. *Sibling rivalry.*—Some children suffered by comparison with an older brother or sister in the eyes both of the parents and of the teacher.

10. *Exceptional intelligence.*—Both extremes of intelligence in children stretched resourcefulness in curriculum planning. When the school recognizes these extremes at the beginning, it can use the curriculum to guard against boredom and unsocial behavior for the bright child and the sense of failure that leads the dull child into problem behavior.

11. *Foreign language.*—This school, which represented roughly twenty-five nationalities, had interracial work in its very structure. One teacher had Spanish-speaking children at the same table early in the term, in order that they could speak to one another and become comfortable. Gradually, as they grew in language and contacts, they went on to other tables.

12. *War children.*—In a sense, most of the children were war victims, even though the degree of scarring was not always extreme.

198 **An Organized Mental Hygiene Program in the Schools**

C. Morley Sellery, M.D., the director of the Health Services of the Los Angeles City Schools, said in 1948 that careful studies of school children have revealed that at least 12 percent are so emotionally maladjusted as to be in urgent need of expert professional guidance from psychologists and psychiatrists.

These maladjusted children present different symptoms which represent an attempt on the part of the individual child to deal with his emotional difficulty. The common personality traits suggestive of need for attention are shyness and lack of confidence, excessive daydreaming, extreme aggressiveness, obstinacy and negativism, fears, crying and whining, suspiciousness, and the "picked on" complex.

The need for a well-organized, carefully integrated, professionally guided

mental hygiene program in the schools is urgent. Thousands of our children are developing mental illnesses, neuroses, and abnormalities of behavior which might be prevented if parents, teachers, and the children themselves were instructed in mental health.

The school is in a most strategic position to provide necessary guidance in mental health, as it contacts every child during the period when ideals and attitudes of human behavior are forming.

One effective procedure for better mental health would be a thorough revision of the curriculum so as to provide adequate instruction in the field of human relationships, personality growth and development, education for family living, and other fundamentals of mental hygiene.

Not only must the curriculum for the children and youth be revised but there must also be vastly increased educational facilities for parents to learn more of parent-child relationships and basic principles of mental hygiene.

199

Mental Health in the Curriculum

Jack Hertzman, M.D., psychiatrist of the Board of Education, Cincinnati, Ohio, says that the development of a mental hygiene curriculum is an essential phase of a total school mental health program.

Educators are becoming increasingly aware of the importance of understanding personal relationships.

Problems encountered in setting up a mental hygiene curriculum are (1) the development in school administrators, supervisors, and principals of an understanding of such courses, (2) selection of suitable teachers, (3) the training and supervision of such teachers, (4) the assembly and use of suitable teaching materials, and (5) the channeling, to proper sources, of individuals in need of personal help.

The success or failure of the human relations course is largely dependent upon the personality of the teacher who leads the course.

200

School Projects in Mental Hygiene

The Committee on Preventive Psychiatry of the Group for the Advancement of Psychiatry reported in 1951 on four different projects intended to affect the emotional development of the school child in the classroom.

The Bullis Project, developed by Colonel H. Edmund Bullis and Miss Emily E. O'Malley in the elementary schools of Delaware, is oriented toward the teaching of positive mental hygiene principles to normal children in public schools. The Bullis Project hopes to achieve its objectives through weekly classroom discussions centering around stories from which can be derived mental health precepts which will impart knowledge and develop attitudes of value to the emotional maturation of the child. In addition, a certain

amount of reduction of conflict and lessening of anxiety is hoped for whenever the discussion touches a problem in which a pupil is personally concerned.

The Force Project has been developed by Mrs. Elizabeth S. Force in the Toms River High School, at Toms River, New Jersey. This project attempts to deal in a practical way with real problems of social and family life. Teaching methods encourage the students to observe others in various situations and to share ideas and opinions with fathers, mothers, physicians, clergymen, business executives, lawyers, and others who are urged to visit the class.

The Ojemann Project has been developed by Professor Ralph H. Ojemann in the University Elementary and Secondary Schools of the State University of Iowa, at Iowa City, Iowa.

This project is oriented toward teaching the students to think in terms of multiple causes and multiple motivation by constant presentation of materials that deal with human behavior. The object is to develop understanding of certain principles of psychodynamics so that they may be applied in daily living.

The Forest Hill Village Project, developed by an interdisciplinary group at the University of Toronto, has been applied in the elementary and secondary schools of Forest Hill Village, Ontario, Canada. This project, unlike the others, has a direct treatment goal. It is oriented toward relieving the child's anxieties by allowing nondirective discussions with free participation by all students. It is also anticipated that the pupils will come to recognize the commonality of emotional processes, and that this will lead more readily to emotional maturation and mental health.

The role of the teacher is emphasized in all of the four projects. The more permissive and tolerant the teachers are in the discussion of cause, experience, and emotional problems in general, the easier it becomes for the pupil to accept and appreciate such functioning in themselves.

The Advancement of Psychiatry Committee believes that these four projects are a step in the right direction toward reduction of psychiatric and social morbidity, and suggests that careful evaluation of results is needed to assist and guide in subsequent developments.

201

Mental Hygiene in Learning

Malcolm G. Preston and Roy K. Heintz, of the University of Pennsylvania, told in 1949 of an experiment involving a class of eighty-three students who were asked to rank twelve prominent men in the order of merit as presidential candidates.

In three separate experiments, the class acted first as a group, then in small groups under leaders instructed to act as supervisors, and finally in small groups with leaders instructed to act as participating members of the groups.

It was shown that participating leadership was the most effective method for changing attitudes of the group and that this type of learning experience was reported as more meaningful and interesting, as well as more friendly and enjoyable than many of the traditional types of teaching methods.

202

Mental Health Screening of School Children

Charles A. Ullmann, Ed.D., clinical psychologist of the Prince George's County Mental Health Clinic in Maryland, has reported a study in which twenty-three teachers rated 810 ninth-grade boys and girls in terms of adjustment and probable need for special help or care because of serious emotional problems.

The teachers judged that 8 percent of the school children were likely, sooner or later, to have serious problems of adjustment and to need special assistance. This estimate is in fair agreement with studies which have suggested that from 7 to 12 percent of elementary school children have or will have serious behavior problems.

In this study teachers rated four boys as seriously maladjusted to every girl so rated. The psychologists also rated boys as more maladjusted than girls.

There was a correlation of 0.86 between teachers and psychologists on the significance of the criteria used in passing judgment on the adjustment state of the pupils.

Self-descriptive data obtained from the pupils appeared to be better predictors of adjustment to problems having to do with feeling, attitudes, inner tensions, and what the individual himself chose to do about these problems.

The investigators concluded that at least two approaches should be made in a mental screening of school children. First, teacher observations should be made, and second, descriptive materials should be obtained from the pupils themselves. Both the ratings by observers and these rough descriptive data appear to be necessary to get a full picture of the adjustment status.

203

Diagnostic Value of Drawing Tests for Children

Archie A. Silver, M.D., of New York City, stated in 1950 that information concerning the emotional, personality, and developmental status of children may be obtained from the use of pencil-and-paper drawing tests.

These tests are easily given and readily interpreted. In the Gesell drawing tests there has been standardization, so that it is possible to say that an eighteen-month-old child can scribble spontaneously, that a two-year-old child can imitate vertical and circular strokes, that a three-year-old child can copy a circle, a four-year-old child can copy the cross, a five-year-old child can copy the square, a six-year-old child can copy the triangle, and a seven-year-old child can copy the diamond.

The Bender-Gestalt test consists of nine geometric figures which the patient is asked to copy. They are presented one at a time, each on a separate card. No time limit is set. Developmentally, there is a progression in the drawing of these geometric figures, from a controlled scribble at the age of three years to a complete, clear, and well-drawn set of figures at eleven years.

The Goodenough Draw-a-Man test has been standardized on 3,585 children, ranging in age from four to ten years. In this test the child is merely told to draw a man. The completeness of the figure indicates the stage of development. Poor patterning of figures results from either organic or psychogenic disturbance. The Draw-a-Man test of Goodenough is reported to give an accurate measure of development.

204***Neuropsychiatric Implications of Illiteracy***

Hunt and Wittson, of the United States Armed Forces Medical Service, indicated in 1951 that the inability to read and write is a serious problem for the military services in any period of national mobilization. Obviously research on illiteracy, even though conducted in a military environment, may have considerable significance for the field of education.

In this study, two groups of illiterates were analyzed, one of 940 and the other of 473 men. It was found that there was a much higher incidence of neuropsychiatric disorders among the illiterates than among comparable groups that could read or write.

Illiteracy was often diagnostic not only of mental deficiency but of various personality disorders as well. Illiteracy adds to the stress of personal adjustment and is an added handicap which predisposes the illiterate to personality difficulties.

As a group, the illiterates were a greater neuropsychiatric risk in the military services than those who could read and write. On the basis of this study it was concluded that out of every group of one hundred illiterates inducted into military service, about fifteen will be given neuropsychiatric discharges before their military training program is completed, and three more will be neuropsychiatric casualties by the end of the first year of service.

205***A Study of Mentally Retarded Boys***

Rebecca M. McKeon, of Worcester, Massachusetts, gave the results in 1946 of a study of 207 mentally retarded boys covering a period of ten years from 1932 through 1942.

These boys, whose ages ranged from 16 to 27 years, had I.Q.'s ranging from 52 to 83, and had received limited academic training; few of them had achieved success beyond the fourth grade level. They had attended special

classes with emphasis on handwork skills, good health, and development of desirable personality traits.

At the time of the survey 113 of the 207 boys were in active military service, 17 were deferred and working at defense jobs, 16 were awaiting the draft, 36 had been rejected by Selective Service boards, 3 had been rejected by the Navy, 3 had been honorably discharged, 1 had died in action, and 18 were ineligible for military service.

The study revealed that less than 25 percent of the group had appeared in court. Among those who did get into conflict with the law there were 22 with only one charge against them, although 29 were guilty of repeated offenses. The most common charge was larceny. Slightly more than 10 percent had spent time in an institution for reform.

Many of these mentally retarded boys were able and willing workers. A study of the incomes of 58 of the boys showed an average earning of \$28.50 per week, although the range in salary was from \$15 to \$100 per week. Among war workers in defense industries the average weekly wage was \$48.

Although the study was too small to warrant sweeping conclusions it appeared that this group of mentally retarded boys was a self-respecting group who contributed something of value to the war emergency by their industrial efforts.

206

Problem of the Poor Reader

Arthur Jampolsky, M.D., of San Francisco, pointed out in 1951 that children who are retarded readers may present a complex problem involving physical impediments, emotional distress, or inadequate teaching methods.

Specific reading disability is caused by a confusion in the recognition of language symbols. It is usually associated with ambidexterity, comparative clumsiness, and an exaggeration and persistence of the normal childhood tendency to reverse letters and symbols. This specific reading disability frequently goes unrecognized.

Nonspecific reading disability appears to be associated with low intelligence, lack of interest, insufficient readiness to read, ocular abnormalities, hearing defects, and emotional problems, as well as other obstacles to learning.

The most common cause of a specific reading disability is the unfortunate application of a method of teaching in which almost the entire emphasis is on visual recall to children who happen to have a specific deficiency in that task. These children are special victims of the flash method of teaching reading which has been evolved by psychologists. By this method, almost the entire emphasis is on visual association. This system works well with the majority of children, but for a child with spatial confusion and poor visual recall it is catastrophic. Such children simply cannot learn by this method in spite of intelligence, effort, and persuasion. This reading block may well

be the cornerstone in the subsequent development of personality and speech disorders, according to Dr. Jampolsky.

Treatment should be directed at furnishing these children with alternate methods of learning to read. This type of child needs to hear the word as well as to see it. He needs to break it up into parts and say it, and feel it by writing it. Reliance should not be placed on just one of these cues. The speech therapists may start at a level of phonetics adapted to the child, so that he may break up the word into sounds. The child says the word as he traces it, then writes it from memory, then uses it in a composition. Soon the word may be pronounced properly by sight, with mental tracing and phonetics. If the child can now mentally say it, he can write it, and then use it. Soon, he too can learn words by sight, utilizing his own methods and reinforcing the visual cues.

Early recognition of some children's difficulty in learning to read by the present system of teaching is important. Children who persist in exaggerated confusion by reading "boy" or "dog" for "God," or who pronounce any of those words thoroughly garbled—"odg," for instance—should be grouped together for an alternative method of teaching, incorporating phonetic and kinesthetic, as well as visual, cues. Children still unable to learn should be examined by people capable of evaluating the intelligence quotient, visual and hearing handicaps, and emotional problems.

The aim should be to teach children to read, not to conform to a particular system. Dr. Jampolsky says that many large cities now have well-organized remedial reading centers, but not many can boast of a logical educational program for the teaching of reading skills to avoid the pitfalls that make remedial reading centers necessary.

207

Emotional Backgrounds of Thirty Children with Reading Difficulties

W. H. Missildine reported in 1946 on a study of thirty children of normal intelligence but with reading difficulties. The children were seen in the Children's Psychiatric Service at the Johns Hopkins Hospital.

One third of the children were burdened with critical, hostile, rejecting mothers. Another third had mothers who were markedly tense, criticizing, and coercive toward their children.

Four of the children suffered from acute jealousy of brothers or sisters at the time they were learning to read. Two others were indulged, then neglected or rejected as they reached school age. Two of the group were over-indulged. With perhaps one exception, all of these children were insecure, restless, emotionally ill persons with the result that their reading disabilities were but a small part of the total picture of their maladjustment.

From this study it might be concluded that reading disability appears to

be a symptom of underlying emotional illness in a great many children who do not respond promptly to specific remedial techniques for poor reading.

208

Unsuccessful Readers

E. Ellis Graham, of the University of Denver, points out that varied theories of the causes of reading failure in children have been expounded within the past half-century. The most recent theories have been those which try to explain the failures through the presence of emotional problems.

In this study ninety-six Wechsler Intelligence Scales were administered to the unsuccessful readers. It was found that these pupils averaged below the expected performance in arithmetic, digit span, information, digit symbol, and vocabulary. On the other hand, the group averaged above the mean on object assembly, picture completion, picture arrangement, block design, comprehension, and similarities.

The performance of the unsuccessful reader was found to correspond closely to that described by Wechsler for the adolescent psychopath. Whether or not young criminals and psychopaths might be expected to be poor in reading owing to school difficulties bears consideration. It should be borne in mind, however, that the population of this study was educationally retarded, but not in trouble with the law. It therefore does not seem unreasonable to assume that the test performance of this group was typical of educationally retarded youth without regard to their moral qualities.

It further appeared from the study that the unsuccessful reader experiences his greatest successes in activities most distant from suggestions of the classroom. If the unsuccessful reader is resisting unconsciously the emotional climate of school or home, this should be expected. If this resistance is passive there may be no other noticeable trouble. If it is active, it might well be manifest through truancy and other violations of authority.

209

A Medical Approach to Reading Difficulties

R. Swartout, M.D., of El Monte, California, says that a child who reads poorly is bound to have more than his share of emotional frustration.

Although his difficulty may be an intellectual deficiency, he deserves careful study in respect to hearing, poor vision, brain damage, and strephosymbolia, a condition found in ambidextrous persons who do not have a dominant half of the brain.

It has been estimated that from 4 to 12 percent of older school children have some inability to read. Adults with reading inability simply do not attempt to read, but children in school are expected to read; therefore, dyslexia, or reading difficulty, has its most warping effect in the age group from five to nine years of age.

Few adults can realize the tremendous tension and sense of insecurity that a sensitive child may have when he is confronted with a school day in which he is expected to do the impossible. These are the times when before-school headaches, nausea, and vomiting are apt to develop in such children.

Statistically strephosymbolia is the most common cause of reading disability. The frequency of this disability may range up to 10 percent of the school population, being dependent partly upon the quality of instruction which prevails in a given school.

Where teachers use the flash method to teach reading, the disorder is far more frequent than where instruction is more highly individualized.

The concept of strephosymbolia is little understood. One of the distinct differences between man and animals is that humans have developed a dominant half of the brain. For example, if a person writes and performs skilled acts with the right hand, the left half of the cortical hemisphere or brain is dominant. This occurs in about 75 percent of the population. If the individual is left-handed the right side of the brain is dominant. This occurs in about 12½ percent of the population. The remaining 12½ percent are ambidextrous and it is in this group that strephosymbolia is apt to develop.

The dominant half of the brain can usually be determined by finding out which hand is the stronger. The dominant eye may be easily discovered by having the child manipulate a pencil so that it falls into line directly with the examiner's eye. This should be done several times with each hand. The eye of the child which is covered by the pencil is the dominant eye.

Testing for strephosymbolia may be done by having a person write numbers simultaneously with both hands. When the child stands at the blackboard with chalk in both hands he should be instructed to write as rapidly as possible a parallel column of numbers with both hands. A truly right-handed or left-handed child will have each column a mirror image of the other.

Those with confusion in their spacio-temporal relationship will exhibit a marked confusion. These children may have the numbers looking exactly alike or badly muddled, but they will not be mirror images. These are the strephosymbolics.

A correct diagnosis of the condition, the envelopment of the child in loving attention, and de-emphasis of school and reading are advisable, with concentration in another field where the child has skills.

Douglas A. Thom, M.D., and Nancy Newell, of Boston, pointed out in 1945 that an extremely high intelligence is as far from normal as is mental deficiency and that it creates problems of its own.

In psychological theory, the range of *normal* intelligence runs from the dull, border-line mentality at 70 I.Q. to the very superior level of 130 I.Q.

The present study of 43 children with an I.Q. *above* 130 showed that the success or failure of the individual child depended upon factors other than his intelligence.

A good home life, with consistent and reasonable training in the very early years, apparently made the greatest contribution to success, through the development of orderly and useful habits and attitudes.

The economic status of the family had little to do with success or failure, but a happy and harmonious home life was definitely favorable.

Some of the problems created by superior intelligence in a child are based upon a poor adjustment to his group. A superior child may learn his lessons quickly and becomes bored with school, after which he may get involved in mischief. Clever or brilliant remarks may attract attention from others and develop an unwholesome desire for the center of the stage on the part of the child with the high I.Q.

The superior child may boss children of his own age but be rejected by older and larger children whose interests fascinate him and challenge his ability.

The intellectually advanced child may be like those of his own age in emotional experience, in physical skills, and in dependence upon his parents. All of these factors may result in behavior problems. Fortunately, children of high intelligence who develop personality problems are less likely to continue thus than children of lower intelligence. In the course of time their intelligence enables many of them to recognize the advantages of conforming to established customs, and this often leads to the discarding of undesirable forms of behavior; but most important of all is a good home life in the very early years.

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Effects of Anxiety on Learning

Drs. Diethelm and Jones, of New York, indicated in 1947 the results of a study of the effect of anxiety on attention, learning, retention, immediate memory, and thinking.

The patients studied (all of whom were under treatment in the in-patient department of the Payne Whitney Clinic) were of superior intelligence. Their ages varied from 20 to 49. In all the patients anxiety was present in pathologic intensity. The intensity of the anxiety was estimated by subjective descriptions, physical accompaniments, and by observations on increases in pulse rate, sleep disorders, variations in food intake, increases in the fasting blood sugar and the white blood count, and other phenomena.

Psychologic tests were given when the patients experienced intense anxiety and were repeated when the anxiety had subsided. The minimal interval

between test and retest was six weeks, but the period was usually two to three months and occasionally longer. With a considerable number of patients, a retest was not possible because they left the clinic before the time for retest had arrived, or at a time when testing was not possible for other reasons. A small group of six patients was studied when anxiety was greater at the time of the retest.

Anxiety appeared to decrease active attention, as measured by the longest span of digits before an error was made. Passive attention, as studied by the recall method, was affected adversely by intense anxiety. This effect was less clear when anxiety was not intense. Learning on the maze test was reliably slower in the presence of anxiety. Retention ability, tested by repetition of maze test twenty-four hours after it was learned, was affected unfavorably by anxiety. Thinking was studied by means of the Kohs block test. It seemed that anxiety decreased the score significantly with most patients, but there was a small group which was influenced little. The influence of anxiety in the different experiments was not uniform.

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Transmission and Relief of Anxiety

Jurgen Ruesch, M.D., and A. Rodney Prestwood, M.D., of San Francisco, indicated in 1949 that a state of anxiety develops when a person feels helpless and immobilized, and action becomes impossible because of self-restraint or constricting environmental conditions.

Anxiety is different from fear or anger principally because of the absence of action. The authors believe that anxiety should be looked upon as infectious and that transmission of the disorder occurs at a rapid pace.

In a series of experiments, the authors attempted to discover the mechanism by which anxiety is transmitted. In one experiment extracts of psychiatric interviews were recorded which revealed anxiety on the part of the patient. These recordings were then played back to a group of twenty-two psychiatrists who were instructed to react to the situation. After listening to the recordings the psychiatrists were either anxious or angry themselves.

Further attempts were carried out to isolate the elements which transmit anxiety. The printed word was investigated in this respect. Results showed that reading did not lead to an infectious perception of anxiety and that there was no transmission of anxiety through this means.

Other experiments tended to establish the following facts: anxiety can be transmitted through sound alone. The cues operating in the situation are primarily acoustic and are manifested in terms of frequency, amplitude, and timing characteristics. Additional anxiety cues are found, but acoustic cues elicit a quicker response and are more easily detected.

It was shown by further experiments that the most successful method of handling anxiety was through communication and sharing. If one person

is anxious and another responds with a calm attempt to share the situation, there is progressive reduction of anxiety in the first person. The basis of this process is the ability of each to express himself; this is especially important in regard to the second person, whose calm appraisal and sharing of the situation are the key factors in reduction of anxiety.

The successful management of anxiety generated in daily life seems possible only in the sharing of anxiety through communication by means of personal contact with another. Ability in expression is basic to this interpersonal relationship.

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Anxiety and Reasoning

Oskar Diethelm, M.D., of New York City, observed in 1949 that anxiety seems to exert a different influence in different individuals. This fact is well recognized with regard to physiological functions, but not with regard to psychological functions, according to Dr. Diethelm.

Although the vast majority of patients reveal the influence of anxiety on attention, only a small group express it in terms of difficulties in thinking—that is, in calculation and in giving correct general information.

There is, however, a small group of patients in whom anxiety can effect a far-reaching disorder of reasoning. For three years the author studied the influence of anxiety on reasoning by means of a group of problems in inductive reasoning. The problems could be solved by children of the intelligence of fourteen years.

In a group of 185 patients of superior intelligence, 72 patients with obvious anxiety had failures in the tests. No failures occurred in the absence of anxiety. When the tests were repeated two to six months later, after anxiety had subsided, the tests were well performed by the patients who had previously failed.

On the other hand, there were a considerable number of patients who performed well despite the presence of anxiety. In two cases the patients performed well the first time when anxiety was absent, but performed poorly a few months later in the presence of anxiety.

These observations force one to recognize the possibility that anxiety may affect reasoning to a profound extent.

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Effect of Relaxation on Memory

Gerald R. Pascal, of Brown University, told in 1949 of a study of the effects of relaxation on memory in twelve persons. Using nonsense syllables as the learning material, experiments were conducted comparing recall under normal tension (sitting in an easy chair) with recall under a state of induced relaxation (lying on a couch listening to five minutes of instructions on relaxa-

tion). With interpolated time held constant at one hour, comparisons were made for recall after 1, 5, and 10 learning trials, respectively. When the number of learning trials was held constant at 10, comparisons were made between learning and recall at 1, 24, and 48 hours, respectively. Analysis showed an over-all statistically significant difference in favor of the relaxed condition, with differences in results between experiments attributable to chance factors, indicating the effect of relaxation to be consistent for the experiments reported.

215***Personal Interviews Improve Learning***

Dr. Alex C. Sherriffs reported a study in 1949 at the University of California in which every eighth student in a class of 257 was singled out for a personal interview by the instructor. This procedure resulted in measurable improvements in academic performance for this experimental group as compared with the remainder of the class.

The interview did not involve any discussion of the course or the student's performance in it, but was concerned only with an exploration of tensions and needs for affection, praise, and achievement.

Despite the academic improvement for the total experimental group, it was found that even among this group some students with greater tensions and greater need for affection and praise did less well than others of the group on examinations. The conclusion was drawn that tensions, affection, and praise are related to examination performance by students.

Students with the greater tensions, and the greater need for affection and praise, were helped most by personal interviews with the instructor so far as performance on examinations was concerned.

Although the effects of the single one-hour interview declined over a period of ten weeks, the interviewed students still maintained a somewhat higher score on final examinations than the remainder of the group.

It was concluded that "effects of continued conferences might truly be exciting" in terms of improved learning situations.

216***Importance of Human Relationships in Learning***

Samuel R. Warson, M.D., of St. Louis, Missouri, recorded in 1949 his experience in the use of psychotherapeutic procedure in teaching the role of social and emotional factors in illness to medical students.

The teaching methods used were found to be related to instructional results. Didactic teaching did not make much impression. The students had difficulty in recalling definitions and even more trouble in applying them to new situations. This difficulty was in marked contrast to the ability to

recall and use definitions that were evolved in group discussion in which the students participated freely.

For example, when the content of a lecture course was checked by asking a group of students for a definition that had been given three weeks previously, only one could recall having been given the definition or its context. Another group, however, could recall quite vividly the procedures of a group discussion a year previously.

It also appeared that the procedures themselves were important only in terms of the relationship that was set up between pupil and teacher and that this relationship was the most important factor in learning.

In this study the approach of the teacher to underlying anxieties of the medical students was the same as that advocated for the students to use with their patients. This gave the students an opportunity for an emotional experience which could be translated in terms of the relationship of their patients to them. In developing an understanding of their patients' needs, the students apparently recognized some of their own.

Psychiatrists have long recognized that real insight does not develop without some emotional experience. This would appear to be the true nature of affective learning as contrasted with intellectual understanding.

Classroom procedures which follow the basic principles of psychotherapy and allow for a relationship between student and teacher analogous to that between patient and physician should be applied in our educational system according to Dr. Warson.

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The Neurotic Child

S. A. Szurek, M.D., of San Francisco, observed in 1950 that neurosis in childhood, as in any other period of life, means that the child suffers from anxiety and that this anxiety is expressed or avoided by certain kinds of behavior. This behavior may be action or lack of it in relation to other persons, or it may be expressed in feelings or physiology.

In general, the neurotic child is apt to be the overconforming, the over-obedient, or the overconscientious child. He is the child about whom it might be said that he is too good to be true, or so good that it hurts. He is the child who is a model of a mother's boy or father's girl.

The neurotic child, instead of showing some fight at aggressiveness on the part of less inhibited playmates, may show a tendency toward flight, tears, and the seeking of protection by adults. Such experiences tend to drive the fearful, intimidated, neurotic child into avoiding possible playmates and thus into some degree of isolation and withdrawal and to an even greater self-contempt and lowering of self-esteem.

Aggressive-behavior disorders in a child are in many respects the opposite of the neurotic disorder. In place of the fearful, rigidly conforming tendencies

of the neurotic, we find the reverse—an extremely defiant, persistently self-centered impulsiveness to any action which gratifies the whim of the moment. Even at the preschool age, such a child is the bully of the playground, ruthlessly exploiting the younger and the weaker children. Parents complain of the difficulty in controlling his rages, of his tendency to wander off or even run away from the home. In the school he is the bane of the teachers' existence. His frequent trancies from school become a problem to both the school and the juvenile court probation officers.

Petty thievery or even burglary or forgery are the more frequent misdemeanors of the boy, while sexual delinquencies, even with adults, are the more commonly registered complaints against the girl.

The child is often alert, spontaneous, even likable in his engaging assertiveness. The child may even be rather frank about some of his misbehavior, although quite apt to lay the blame upon his teacher, his brothers or sisters, or other grumpy adults. On the other hand, he may simply deny any knowledge of the reasons for his actions.

These children may often show what is at the moment obviously sincere regret and remorse, but impulsiveness often proves to be stronger than any self-restraint.

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***Emotional Problems of Adolescence
Due to Delayed Maturation***

William A. Schonfeld, M.D., of White Plains, New York, reported in 1950 on a study of 256 boys who ranged in age from nine to sixteen years at the first visit to this physician. These patients were studied for six months to twelve years.

The boys were brought to medical attention because either the child or the parent was concerned with failure of the boy to develop into normal puberty, although examination showed there were no gross defects or glandular disease. All boys appeared capable of developing into sexually normal adolescents within time.

The boys showed personality difficulties and emotional conflicts associated with what appeared to them a failure to develop according to normal sex patterns for boys of their age.

Psychiatric treatment and other measures were used to alleviate fears in this group. Reassurance was considered sufficient in about 25 percent of the boys studied. In about 20 percent of the cases the boys were treated with hormones and their histories followed for a period of time, without evidence of any harmful results from the glandular treatment. In a few cases plastic surgery was successful in correcting conditions that had caused psychological damage.

Juvenile Delinquency

Sheldon and Eleanor Glueck reported in 1950 the results of a ten-year study of the causes of youthful crime. It was their conclusion that delinquency can be diagnosed at an early stage. The Gluecks surveyed one thousand boys between the ages of eleven and seventeen in Boston and its environs. One half of the subjects had police records. The other half was classed as non-delinquent, and served as a control group.

The two groups were matched carefully as to age, intelligence, national ancestry, and type of residence.

Three factors were found to be prominent among the five hundred delinquents: (1) The delinquent boys generally had poor family relations. They received little love from their parents, and fathers were harsh in their maintenance of discipline. (2) The delinquents clashed with other people, were highly assertive, defiant, suspicious, destructive, and impulsive. (3) The delinquents had turbulent personalities, were adventurous, extroverted, suggestible, stubborn, and emotionally unstable.

Some factors previously thought important actually were found to mean little or nothing. Among these were the age of the parents at the time of marriage, differences in ages of the parents, drunkenness or extreme poverty in the father's family, size of household, and economic status, as measured by the rent paid by the parents.

The Gluecks concluded that the detection of delinquency in its earliest stages is a job for specialists.

A Study of Hidden Delinquency

Murphy, Shirley, and Witmer, of Massachusetts, observed in 1946 that mental hygienists have always been concerned over the fact that many a youthful violator of the law goes undetected until a delinquent pattern becomes deeply ingrained and that many children receive a juvenile court record for a relatively innocent misdemeanor.

From the case records of the Cambridge-Somerville Youth Study it has been possible to arrive at some measure of the amount of juvenile lawbreaking that is hidden from public view.

The records of 114 boys between the ages of eleven and fifteen years were studied. Of this number only eleven boys had no violations to the case workers' knowledge. The remaining 103 boys had committed 6,416 infractions of the law during a five-year period, but only 95 of these violations became a matter of official complaint. In other words, authorities took official action on less than 1½ percent of the infractions.

Approximately 1,400 of these infractions were violations of city ordinances, 4,400 stealing, running away, and so on, while 616 were serious offenses such

as burglary, assault, drunkenness, and sex offenses. Less than 1 percent of the minor offenses and only 11 percent of the serious offenses were prosecuted.

Of the 103 boys with violations, only 40 could be classified as official delinquents (with juvenile court records).

It was concluded from this study that so frequent are the misdeeds of youth that even a moderate increase in the amount of attention paid to them by law enforcement authorities could create the appearance of a "delinquency wave" without there being the slightest change in adolescent behavior. Juvenile court statistics thus do not appear too useful as an index of children's behavior.

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Practical Problems in Treating Delinquents

Melitta Schmideberg discussed in 1949 some of the problems in the treatment of the delinquent.

According to this authority, the delinquent does not come to the psychiatrist of his own accord, but often under compulsion. The majority of delinquents are not educated and are often of low intelligence. One cannot expect frankness from patients who are habitual liars and who have good reasons for concealing things in their lives. Some delinquents have a feeling that something is wrong with them, but others feel that their condition is a result of bad luck or the fault of society. But even delinquents who come for treatment of their own free will do not have the insight into their problems that neurotic patients may have.

Difficulties encountered with these patients are due to poverty, previous trouble with authorities, a different psychological make-up, a different attitude on the part of society toward these people, and the fact that many come for treatment under compulsion or persuasion.

In the case of delinquency, the problem is not one of treatment alone but of finding a friend or friends for the delinquent. Delinquents associate mainly with fellow delinquents and criminals. They feel isolated from ordinary people because they have important parts of their lives to hide, and this makes it difficult for them to make social contacts. Criminal associates are in themselves dangerous potentials for further trouble. A delinquent shows an important sign of adjustment when he begins to choose other associates than fellow delinquents, and it is in this respect that he should be helped. Unfortunately, it is difficult to find people who will meet delinquents on a normal social level.

Few delinquents come regularly for treatment. All treatments are relative, and if a delinquent person commits another offense his treatment should not necessarily be regarded as a failure. Treatment should be continued after or while punishment is being accorded. Even with existing serious handi-

caps, the number of delinquents who can be helped to make better adjustments by psychiatric treatment is impressive.

222 *The Schools and the Delinquency Problem*

Edward H. Stullken, principal of the Montefiore Special School in Chicago, says that experience has shown that certain principles should be followed in developing the school's program to meet the problem of juvenile delinquency.

These principles are as follows:

1. All children must have the right to develop into self-respecting, useful citizens by the process of public education, and that right must not be abridged by a handicap of any kind which can be eliminated or mitigated through the facilities and resources of the school.

2. No program for problem children is sound unless it recognizes the fact that the behavior of such children is symptomatic and purposive. An objective attitude on the part of school workers toward children's behavior may serve to prevent problem cases from developing.

3. Problem children differ from normal children more in degree than in kind. There is no hard and fast line between normal and abnormal adjustment.

4. School systems should provide for early identification and early diagnosis of children who are maladjusted.

5. The education of problem children requires a broader basis than that of mere intellectual development. These children often have warped personalities, and, consequently, their feelings and attitudes are the object of more concern than their academic attainments. Children who are deviants because of social maladjustment need a chance to develop emotional stability; they need personal, educational, and vocational guidance; they need to experience the sense of security that goes with a socially acceptable personality.

6. Schools must recognize the fact that a problem child is one who may be normal within himself but yet be exceptional because of antisocial home and community influences.

7. The special-education program of problem children should be a part of and not apart from the general educational program. The same objectives for educating normal children hold for educating socially maladjusted children. The tendencies to substitute specific trade training for courses in general education is no more justifiable for problem children than it is for normal children.

8. In organizing and administering a program of education for the problem child, school administrators must maintain a balance between the interest of the pupils needing placement in special groups and the interests of the great majority of the school population. In general, placement of any child

in a special group should not be made if that child may receive as good or better training in a normal group, even though it may be necessary to give special help and additional services over and above those which are usually provided. The exception to this rule is found whenever the detriment to the normal pupils outweighs the benefits to the handicapped individual from his association with the regular group.

9. Any program of education for the socially maladjusted will be conditioned by the selection of properly qualified trained personnel, both those who work in the program and those who administer and direct it.

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Juvenile Delinquency in San Francisco

George W. Ososke, chief juvenile probation officer of San Francisco, in 1949 reported that in the previous year the Juvenile Court Department handled cases which involved 11,411 children.

The reasons why 1,349 youngsters were placed under the supervision of the juvenile authorities were many and varied. However, 69 percent of them came from broken homes.

Principal causes of the broken homes were divorce and death. Forty percent of 927 family rifts were the result of divorce. In another 171 homes, one of the parents had died. The third major cause for the absence of a parent lay in the failure of mothers and fathers to get married.

Other causes were desertion, legal separation, hospitalization or imprisonment, and geographical problems of employment.

Of the 1,349 wards, 488 came to the attention of the court because of lack of parental control. Refusal to obey made up another 102 cases. Other principal causes for the establishment of the court's wardship over boys were burglary (178 cases), auto theft (121 cases), and destitution (113 cases). The offenses ranged from theft and habitual truancy into such adult misbehavior as sex offenses, robbery, and liquor law violations.

Destitution, the danger of immorality, unfit homes, and abandonment made up the great bulk of reasons why girls became wards of the court. "Problem" children made up 55 percent of the number of wards. The average age of "problem" boys was 15.6 years, and of "problem" girls 15.8 years.

Almost three quarters—73.6 percent—of the new problem children handled during the year were returned to the homes of their parents, 13.7 percent were placed in institutions or schools, 5.1 percent in foster homes, 3.7 percent in the homes of relatives, and 3.9 percent were disposed of in other ways.

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The Constructive Use of Punishment

R. L. Jenkins, M.D., of the Institute for Juvenile Research, Chicago, said in 1945 that the widespread misuse of punishment and the cruel manner in

which it is often applied have resulted in a reaction against it as a means of influencing human behavior.

Dr. Jenkins believes, however, that children cannot be socialized without a discerning use of punishment, and that a society cannot exist without sanctions of punishment.

Punishment as one method in a child-training program may contribute significantly toward the development of inner controls, or of what is conservatively called character. If punishment is to have a constructive effect it is essential that the child feel loved, or at least accepted, and that he be able to recognize the punishment as a limited disapproval of some limited and modifiable aspect of his behavior. If the child interprets the punishment as a result of a general and lasting dislike or hostility from the people on whom he is dependent for love and security, it will inevitably have a destructive effect.

Broadly speaking, reactions to punishment may be classified under five headings: (1) indifference, (2) disorganization, (3) hostility and counter-aggression, (4) acceptance of limitation, or social adaptation, and (5) acceptance of punishment without acceptance of limitation.

Many factors enter into the determination of which or what combination of these reactions may follow punishment. Some of the factors are the following:

1. *The sense of acceptance or emotional security left to the punished person.*—With a sense of acceptance, the reaction to punishment is likely to be adaptation.

It is only when the parent continues to satisfy the affectional needs of the child, and relates the punishing experience to some special type of behavior discernible by the child, that the latter gradually comes to recognize that punishment does not necessarily imply hostility.

2. *The clarity of the prohibition to the punished.*—If a prohibition is to be effective, it must be understood. If it is not clear, there will be a reaction of irritation or of anxiety, depending upon the personality, and the response is likely to be one of counter-aggression.

3. *The reasonableness of the prohibition to the punished.*—If the prohibition is consistent with other prohibitions familiar to and more or less accepted by the punished, he will be the more likely to respond with adaptation.

4. *The severity of the punishment.*—Very mild punishment may be easily ignored. The reaction may be true indifference or acceptance of punishment without acceptance of limitation. Very severe punishment is likely to result in disorganization, particularly if there are other factors contributing in this direction, such as lack of clarity or understandability in the prohibition, or inconsistency in its enforcement.

5. *The reasonableness of the type of punishment to the punished.*—A type

of punishment that appears reasonable to the punished is likely to bring about adaptation.

6. *The consistency with which the punishment is applied.*—Consistency is of major importance in determining adaptation. Application of punishment to one offender, if other known offenders are let off with less punishment or without punishment for no acceptable reason, is likely to be regarded as personal aggression. It may provoke counter-aggression or discouragement and acceptance of punishment without acceptance of limitation.

7. *The sense of the punished regarding the force behind the punishment.*—If we bump our heads against a stone wall, the initial reaction is likely to be one of wanting to kick the wall, to exert counter-aggression. If we yield to this temptation, we soon cease this method of attack because we realize that the wall is there, that it is solid, and that we are wasting our time in attempting to attack an unyielding limitation.

Most of us have—since life requires it—a considerable willingness to take a chance. It is for this reason that severity of punishment is a much less effective deterrent than certainty of punishment.

8. *The effect of group attitudes.*—Since we live in a society, group attitudes are of tremendous importance in determining the individual's attitude toward punishment. When a limitation of behavior, contrary to the loyalties and self-accepted taboos of a group, is imposed upon the group, a conflict situation is inevitable, and the group tends to support the offender against the outside authority.

Group punishment is commonly used in an effort to bring pressure on the group to restrain or punish the individual members who offend. If the group is in sympathy with these members, group resistance may be expected, and even methods of terror may have little effect.

Harry Bakwin, M.D., of New York, said in 1949 that within recent years there has been a growing appreciation of the multiplicity of factors which may cause disturbances of behavior in children.

Behavior disorders have been observed with brain damage due to encephalitis, burns, head injuries, brain tumors, lack of oxygen to the brain, and allergy. In addition, a large number of organic disorders of the brain may present themselves as behavior disturbances.

Changes in personality and behavior occur in a large percentage of all children following encephalitis (inflammation of the brain). The symptoms generally become apparent immediately after the acute phase of the disease is over, although their appearance may occasionally be delayed for years.

Generalized degenerative changes in the brain have been observed in as-

sociation with extensive burns. The clinical manifestations are those usually seen in children with diffuse brain damage, such as excessive activity, poorly patterned behavior, and inability to adapt to social demands. There is some interference with mental functioning which may be progressive. School adjustment is poor.

Children withstand head injuries better than adults, among whom the presence of arteriosclerosis would seem to predispose to more serious damage. In most instances psychic disturbances appear some time after the injury but occasionally there is an immediate reaction manifesting itself as an acute psychosis with excitement, marked impulsiveness, and restlessness over which the child has no control.

The chronic disturbances following brain injury may take the form of (1) a behavior disorder, (2) epilepsy with secondary deterioration, or (3) cerebral defect with secondary intellectual deterioration.

Behavior disturbances generally occur after severe injury but they may follow apparently minor injuries.

The behavior disturbance is characterized by unusual changes in personality, the outstanding features of which are overactivity, restlessness, destructiveness, impulsiveness, assaultiveness, cruelty to animals, emotional instability, temper tantrums, truancy, and delinquency. There is no loss of mental power.

Epilepsy is a late complication and is sometimes susceptible to surgical treatment. Since convulsions occur only rarely after severe head injury, it is assumed that a constitutional predisposition is required.

Disorders of behavior and personality associated with brain tumor are somewhat less frequent in children than in adults. The most frequent signs and symptoms are apathy, dullness, somnolence, poor co-operation, and inattention of a mild or transitory nature. In addition there is apprehension and depression, excessive crying, and temper tantrums.

Cerebral anoxia, as a cause of brain damage during early life, is receiving increasing attention. In the adult, severe lack of oxygen whether from asphyxia by smoke, inhalation of carbon monoxide, gaseous anesthesia accidents, strangulation, or depressed respiration produced by drugs, leads to character change and memory defect.

Asphyxia is the most common cause of brain damage associated with injury at birth. Although the fetus and newborn, in the human as well as other animal forms, can survive degrees of oxygen deficiency that would be fatal in later life, the survival does not guarantee freedom from serious damage to nervous structure. Indeed, survival may be a mixed blessing.

In 1945 Preston reviewed the histories of 132 children who had been deficient in oxygen at birth. One fourth of these were mentally retarded. The remainder were of normal mentality but all showed deviable behavior. About 40 percent were hyperactive, approximately the same percentage were apathetic, and about 20 percent were epileptic.

Speech impurities and stuttering were common and memory was poor. Social contacts with other children were difficult to establish since the afflicted children were unable to conform to group play and suffered continual frustration.

The frequency of complications of the nervous system following whooping cough was recently emphasized by Litvak and associates. Forty-seven out of 6,002 children (0.8 percent) admitted to the Kingston Avenue Hospital for Communicable Diseases showed gross damage to the nervous system. One half of the afflicted children were under one year of age; this is the usual experience.

Lurie and Levy observed definite behavioral, intellectual, and personality changes in 34 out of 58 children who had had whooping cough during the first two years of life. The majority of the children first manifested their difficulties between the ages of ten and eleven years, although in some the onset was even later.

A striking finding was a delay in the time of walking and talking.

The view that disturbances of behavior may be related to the allergic process is favored by a large number of allergists and psychiatrists. In 1922 Shannon pointed out that allergic children were often restless, irritable, unruly, peevish, out of sorts, high-strung, and difficult to manage. He concluded that many of these symptoms result from irritation of the nervous system because of reactions to food proteins to which the patient is sensitized. Others have also stressed the changes in personality and behavior in allergic children.

A behavior disorder on the basis of brain damage must be differentiated from other causes. In favor of cerebral damage are:

1. History of an injurious episode usually in early life.
2. The symptom complex of hypermotility, impulsiveness, short attention span, rapid change of mood, variable memory, and poor performance in arithmetic.
3. The absence of an emotionally damaging home environment.
4. Changes in posturing and motility.
5. Changes in performance on psychometric tests.

The child who misbehaves on the basis of cerebral damage needs, from the very start, an extra amount of maternal affection, attention, and support. The parents and teachers need to know that the misbehavior is not the child's fault but that it stems from his defect. All along the line the child needs extra praise, encouragement, and approval.

The advisability of nursery school attendance should be carefully weighed. The child should be allowed to attend only if he seems capable of giving a fair amount of attention and concentration. It may even be wise to postpone entrance into grade school.

Much can be done for these children. Where there is reason to believe that brain injury has been sustained, the child should be given additional support and affection before his symptom develops, even at the expense of setting up undesirably close emotional attachments and dependency relationships.

226***Mental Health and Encephalitis***

J. V. Greenebaum, L. A. Lurie, B. Leichtenritt, and Florence M. Rosenthal, of Cincinnati, Ohio, reported in 1945 on a study of 50 children who suffered from encephalitis (inflammation of the brain) from diseases such as poliomyelitis, influenza, measles, chickenpox, diphtheria, scarlet fever, and other disorders. Most of these infections had occurred before the age of 5 years.

Only 9 of the 50 children were later able to make satisfactory personality adjustments, whereas most of the remainder developed behavior problems and personality changes before the age of 10 years.

The children had been studied for a period of from 3 to 25 years and it was apparent that encephalitis early in childhood may damage the brain and lead to personality disturbances of such gravity as to prevent a normal adjustment to life despite the fact that the intellect may be unimpaired.

Thirty-two of the children in this study were characteristically suspicious, impulsive, egocentric, and selfish. They had violent temper tantrums and were extremely obstinate. Emotionally they were highly unstable, lacked ability to concentrate, and had very little self-control; hence their actions were highly unpredictable and most often destructive and cruel. Others in the group studied were outstandingly aggressive. Lying, stealing, and running away were also common. Bed-wetting was often present. These children were extremely difficult to control.

227***Emotional Characteristics of Adolescents***

Irene M. Josselyn, M.D., of Chicago, said in 1951 that parents, teachers, and group workers in day-to-day work with the adolescent have observed certain characteristics, which can be summarized as follows:

1. They find the adolescent struggling for independence, verbalizing and protesting against the protective rulings of the adult group.
2. The peer group dominates his thinking. This group is made up of individuals of approximately the same emotional level, regardless of chronological age or intellectual ability.
3. The adolescent's sexual behavior is extremely confusing to those studying it. The choice of loved ones is unpredictably changeable.
4. Speech and behavior from day to day are characteristically contradictory.

The adolescent seems to be an idealist, and yet his behavior does not always bear this out.

5. The relationship of the adolescent with other people is confusing. One moment he hates; the next he loves. The object of this emotional response may be the same person, or it may be a different person.

6. He rejects his parents as if they were lepers in a community of healthy people. In almost the next breath he idolizes them, pictures them as more saintly than the saints, more learned than the sages, more omnipotent than God.

7. He is characteristically secretive about himself and his feelings, but, on the other hand, he may bare his soul and reveal dreams, guilt, and conflict.

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Training for Mothers of Problem Children

A. D. Buchmueller, M. S., and Margaret C. L. Gildea, M.D., of St. Louis, Missouri, reported a project in 1949 in which two groups of mothers of problem school children were given psychiatric assistance in individual interviews and group meetings in the school. The assistance rendered was of the group-therapy type, with all mothers participating in discussions of specific behavior problems on the part of their children.

On the basis of carefully collected data from home and school, it was found that approximately 75 percent of the children showed measurable improvement in behavior and adjustment after their mothers had attended these group sessions on mental hygiene. The marked improvement in behavior occurred in both the home and the school.

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Dearborn's School for Delinquent Parents

On the theory that juvenile delinquency can nearly always be traced to family difficulties and that jailing and fining a parent can often work more hardship than correction, Judge George T. Martin, of Dearborn, Michigan, started a school for delinquent parents in 1944. Parents charged with neglect, nonsupport, drunkenness, assault and battery, and disturbance of the peace, were told upon conviction for a first offense that they could either attend classes as a condition of probation, or accept the usual fine or jail sentence. Most of them chose the classes.

By 1946 records showed that no parent who had completed the course had ever been brought back into court on similar charges, and the city of Dearborn had the best record of juvenile protection in the country.

Classes were held in the judge's own courtroom and lasted about an hour. The first half-hour was devoted to talk on some phase of home and family living by an expert in the field. The second half was used for questions and general discussion.

Subjects included general family health, specific child health, family finances, family recreation, home economics, dietetics, housekeeping, child psychology, child guidance, care of the sick, and problems of youth.

Most parents, Judge Martin feels, are willing to learn, and their faults are those of ignorance, not willful misconduct.

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Treatment of Parent-Child Relationships

Rose Green, of the University of Southern California, said in 1948 that in child guidance clinics there is a steady conviction that treating a child who lives in his own home is of little avail if at least one of his parents is not an active participant in clinic treatment. There is a growing conviction that the parent needs to be the one who refers the child, even in school clinics where first notice of a child in trouble comes from teachers.

The present emphasis in guidance is built on the realization that treatment of either parent or child is not as effective as treatment of the relationship between them.

A parent comes to a child guidance clinic because he is disturbed about his child and is looking for a way to help him. The parent may be subject to all sorts of pressures—family, school, court—but it is the parent's necessity in relation to those pressures that brings him to a child guidance clinic.

Clinics are experimenting with procedures that grow out of this approach to understanding the parent in his role of parent. Skill in relation to the use of this aspect of the parent-child relationship would make the clinical approach more effective, and might shorten the average length of time for clinical treatment.

Most clinics have moved away from the feeling of blaming parents, whether directly or subtly.

Many social institutions such as the school, court, and some social agencies, are still expressing blame of parents directly and indirectly. This is a negative use of the responsibility inherent in the parental role. It is hoped that a more constructive use of the responsibility inherent in the parents' role will become a part of the philosophy and activity of the many social institutions dealing with parent-child relationships.

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Family Backgrounds in Neurosis

Harrington V. Ingham, M.D., of Los Angeles, gave the results in 1949 of a study of the family relationships of 138 psychoneurotic university students.

Mental illness in parents, separation of parents or lack of adjustment between them, rejection by parents, parental overrestriction, mental illness in siblings or disturbed relationships between them, and disruption of the sub-

ject's marriage were considerably more frequent in those students suffering from psychoneurosis than in the university population at large.

The findings of the study are summarized in the following tables:

FAMILY CIRCUMSTANCES MORE FREQUENT IN NEUROSIS

Parents	Percent	
	Neurotic	Control
Mentally ill, one or both.....	47.1	2.7
Both mentally ill	7.9	0.0
Separated	31.1	13.5
Unhappy together	18.8	5.6
Rejection by one or more	49.3	11.6
Rejection by both parents	17.4	1.4
Overrestriction	42.0	10.3
Siblings		
Mentally ill	17.9	0.3
Conflict	21.0	8.1
Subject's marriage disrupted	71.9	6.9
Mental illness in family	55.1	3.8
Conflict in family	81.2	36.8

FAMILY CIRCUMSTANCES NO MORE FREQUENT IN NEUROSIS

Circumstance	Percent	
	Neurotic	Control
Death of parent	21.0	19.2
Parent physically ill	14.5	17.8
Bicultural home	23.2	31.4
Other relative in home	9.4	18.4
Sibling favoritism	13.8	19.4
Lack of siblings	23.2	20.5

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Why Children Are Referred to Psychiatrists

Margaret E. Branscom, M.D., of the Children's Psychiatric Service of the Johns Hopkins Hospital reported in 1949 on a study of ninety-two children who were seen in private consultation or in the outpatient department of the Children's Psychiatric Service of the Johns Hopkins Hospital. The purpose of the study was to discover why children are referred to the psychiatrist.

Of the ninety-two cases, seventy-one were referred by other physicians, fifteen were referred by social agencies (eight from schools, seven from other agencies), and six were brought solely on their parents' initiative.

The initial reasons for seeking help were divided into six categories: body complaints without sufficient or any organic cause (thirty-three cases); be-

havior problems (twenty-six cases); symptom-management problems, e.g., feeding difficulties, hair pulling, breath holding, overdependence, and speech and reading disabilities (thirteen cases); evaluation and advice regarding questionable mental retardation (twelve cases); management problems in the care of special physical disabilities, e.g., spastic, epileptic, and deaf (seven cases); and morbid daydreaming (one case).

The specific situations that motivate parents to bring a child to the physician when they do, appeared to be unique in terms of each family.

In the ninety-two cases studied, the precipitating cause for seeking psychiatric help was a crisis arising in the child's environment. This might be due to the parent, to the physician, or to a social agency—most often the school. The specific timing of the initial psychiatric consultation seemed to be determined, in significant measure, by certain life situations such as the following:

1. The overprotected child finds it difficult to make the initial adjustment to kindergarten or first grade (fifteen cases).
2. The approach of the time when promotion would normally occur precipitates reference of the child who is not doing well in school (sixteen cases).
3. The new demands of preadolescence and adolescence bring an emancipation problem to the previously "good" child (nine cases).
4. Therapeutic despair makes the general practitioner or pediatrician decide that "this is a case for the psychiatrist" (thirty-seven cases, the largest group by far).
5. Somewhat similarly, social agencies, after struggling unsuccessfully with difficult sociological situations, turn in despair and hope to the psychiatrists for a situational solution or an evaluation and resolution of the personality problems involved (fifteen cases).

233 *Psychiatric Treatment for Problem School Children*

Ernie Hill reported in 1950 that a public school in the Bronx was faced with such a record in delinquency among its pupils that an emergency experiment in psychiatric treatment was begun by school authorities.

It was found that in the school were organized gangs who preyed on smaller children, forcing them to hand over five cents a day or take a beating. Some children were carrying daggers under their shirts and the parents of others were wanted by the police. Numerous other behavior problems also were found to be common.

A staff of six persons, including psychiatrists, psychologists, social workers, and a vocational-educational counselor was assigned to the school for intensive work with the problem children. It was planned to add three additional persons to this staff.

The first psychiatrist on the staff resigned after one month with the com-

plaint that there were too many cases with too many complications. She was replaced with two part-time, experienced psychiatrists.

The New York Board of Education extended the program into the junior and senior high schools near by so the children given psychiatric treatment could be followed for at least a three-year period from the elementary school in which this program had been established. Attention is being centered on pupils aged eight to ten years, with records in every type of delinquency.

234***Nail Biting Among College Students***

Coleman and McCalley gave an account in 1948 of an investigation involving the study of certain personality and background factors as a cause of nail biting among 1,077 college students.

Approximately 29 percent of the men and 19 percent of the women were nail biters.

More women than men had given up nail biting; originally about as many women as men bit their nails. Including present and past nail biters, the incidence figures were approximately 52 percent for males and 54 percent for females.

The reasons given for nail biting related primarily to (1) using up excess energy, and (2) reacting to anxiety and stress.

Reasons for giving up nail biting related primarily to (1) social disapproval, (2) social value of well-kept nails, (3) fear of infection, and (4) imitation of parental care for the hands.

In general, nail biters were not found to be either highly introverted or neurotic, as tested by the Bernreuter Personality Inventory. However, the female nail biters, as compared with their control group, showed a marked trend toward higher introversion and neuroticism scores. A lesser trend in the same direction was apparent in the male experimental group.

Self-evaluations revealed that the male nail biters, as compared with the non-nail-biting controls, felt significantly more current anxiety, and tended to feel that their independence had not been adequately furthered during childhood, and that discipline had been inconsistent in their homes. Female nail biters also felt significantly more current anxiety, and tended to feel that they had not received sufficient praise for childhood accomplishments.

235***Psychiatric Service for College Students***

Portia Bell Hume, M.D., of the Langley Porter Clinic, said in 1947 that experience with psychiatric patients among the students at the University of California indicated certain desirable principles for student health services to follow:

1. Since most of the personality disorders present themselves with physical

complaints, the physicians who see students are the ones who, in the majority of cases, are the first to detect the need for psychiatric attention.

2. When psychiatric service is readily available, many students will voluntarily seek help.

3. The psychiatrist should be a part of the student health service and not connected with any academic department, dean's office, or administrative headquarters. Such connections are associated, in the students' minds, with disciplinary rather than medical treatment.

4. When both accessibility and privacy of treatment are provided, students will not have to wait until they are physically sick or desperate in order to get psychiatric attention.

5. A psychiatric service can anticipate that about eight psychotherapeutic interviews, on the average, will be required for treating the commonest of the conditions for which psychotherapy is prescribed—namely, emotional disturbances with somatic symptoms.

6. The clinical psychologist is most helpful in diagnostic studies and in vocational guidance.

7. The trained psychiatric social worker is invaluable both in investigating and in manipulating the environmental factors that play a causative or curative role.

8. Even though they are suffering from severe personality disorders, students may in many cases remain in college without harm to themselves or to others.

9. The physician-patient relationship should always be voluntary.

10. The nonpsychiatric staff of a student health service should be instructed in the principles of medical psychology so that the physician can recognize which conditions it is desirable for him to treat and which he should refer to the psychiatrist.

11. Faculty members and the personnel of deans' offices cannot very well take the responsibility of determining when physical symptoms are of psychological origin; nor can they safely distinguish between serious signs of depression and the more normal forms of anxiety.

12. A psychiatric service is necessarily expensive, but it relieves other physicians in the student health service from treating a large number of chronic complaints.

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Factors in College Success

Henry H. Morgan, of Wesleyan University, Connecticut, reports a study of 132 college sophomores with high scholastic aptitude in which an effort was made to distinguish those factors in which the successful college student differed from those who were relatively unsuccessful.

Psychometric comparisons of achievers and nonachievers were made on

the Strong Vocational Interest Blank, the Minnesota Multiphasic Personality Inventory, the Thematic Apperception Test, and a series of semistructured questions.

Several nonintellectual factors or personality variables appeared to be related positively to the academic achievement of high-ability college students. These factors were (1) maturity and seriousness of interests, (2) awareness of and concern for other persons, (3) a sense of responsibility, (4) dominance, persuasiveness, and self-confidence, and (5) motivation to achieve, or the need for achievement.

Chapter XIII

The School Environment

A national survey of school facilities, made at the direction of the Eighty-first Congress in 1952, indicates that about 3 percent of the pupils in the United States are attending schools in which there are no toilet facilities and in which there is no water on the school grounds. Nearly 19 percent of the pupils are attending schools in which there are no sewage disposal facilities. Approximately 15 percent of the nation's school children attend school where there are no fixed washing facilities and 17 percent of the children are attending schools with outdoor privies.

Approximately 70 percent of all secondary schools in this country do not have health rooms or medical suites. When both elementary and secondary school plants were combined, approximately 85 percent did not have health rooms.

The survey also showed that about 20 percent of all school buildings were found to be hazardous from the standpoint of fire safety and an additional 17 percent were possibly hazardous.

The problem of the healthful school environment is both medical and engineering in nature. It is only to the extent that the architect, custodian, and principal understand and appreciate the requirements of a healthful environment that new schools and major alterations to existing schools will be made to promote good health or prevent ill health. It is suggested that the health department can play a useful and effective part in orienting school authorities to a more healthful school environment.

In North Carolina a School Sanitation Inspection Form was developed in 1951 for use throughout the state. This form was developed by representatives of the State Department of Public Instruction, State Board of Health, and the School Health Co-ordinating Service. The inspection blank is used by the sanitarians of the local health departments who make periodic school inspections. Ultimate plans in that state call for the making of two inspections of every school each year.

In Wisconsin nearly 70 percent of 4,000 or more one-room schools were found to have unsafe water supplies. A few had no water supplies at all. It was also found that slightly over 70 percent of these one-room schools had inadequate and insanitary toilet facilities. A large majority of outdoor privies at these schools were not fly-tight, rodent-proof, properly vented, or substantially constructed.

A survey has been reported of the water supply and sewage disposal facilities in 253 Connecticut schools which did not have water under pressure from a water supply. Much room for improvement of school sanitation was ob-

served in this survey. A survey of interior water-piping hazards in two Connecticut cities covering 415 public buildings revealed four primary types of hazardous plumbing, as follows: cross-connections, back-siphonage connections, direct sewer connections, and inadequately protected drinking water tanks.

An epidemic of gastrointestinal illness that occurred among the pupils in a large Midwestern elementary school was traced to back siphonage that resulted in the appearance at the drinking fountains of water from the toilet bowls. Sanitary engineering investigation proved that faulty plumbing was the direct cause of the spread of this gastrointestinal illness.

Studies have been reported on drinking fountain sanitation and the drinking habits of the American public. It has been shown that disease-producing organisms can be recovered from every part of all fountains under certain conditions. Experimental contamination of fountains showed that bacteria remained from thirty minutes to two hours on the inoculated parts. Splashing, too, was found to be a source of infection when test organisms were recovered on fourteen of seventeen agar plates inverted at face distance above the drinking fountain.

A national survey of the drinking habits of 48,000 persons at public fountains showed that approximately 28 percent of the drinkers were able to get their lips on fountain jets or guards. People were observed also to spit in the fountains, rinse out their mouths, wash handkerchiefs, deposit chewing tobacco, gum, cigarettes, paper, and other objects in the fountains. Numerous other unhygienic practices were observed and point up the need for the education of both children and adults in the proper use of drinking fountains.

A bubble fountain in a new elementary school was found to be the source of an outbreak of trench mouth that involved thirty-eight pupils and three teachers.

The importance of proper food handling was illustrated in an epidemic of mild gastroenteritis that affected 41 percent of 156 students who ate regularly in the same dining hall. It was found that one student was the source of the infection and his contamination of dishes and silverware served to spread the disease.

Although a number of studies suggest that ultraviolet irradiation of classroom air may reduce the spread of certain communicable diseases, other studies have not indicated great value from this procedure. The ultimate value of this practice has not yet been determined, nor has the use of chemical vapors for the disinfection of schoolroom air. Committees of the American Medical Association, the American Public Health Association, and the National Research Council have concluded that the general use of ultraviolet irradiation or disinfectant vapors in schools is not justified at the present time.

Recommendations have been made by the American Medical Association

regarding light intensities in schools according to the nature of the seeing task. It is concluded that more than fifty to sixty foot-candles are not required for even the most exacting visual tasks of everyday life. Other factors in good lighting are also discussed.

The Council on Industrial Health of the American Medical Association reported in 1945 that fluorescent lighting is not harmful to vision and should not cause eyestrain if lamps are properly installed and correctly used.

The American Council on Education has reported a study on the utilization of toilet facilities in elementary and high schools and has made certain recommendations regarding the ratio of toilet facilities to pupils in school.

The New York State Department of Health has made recommendations regarding room temperatures in the schools. Studies suggest that although room temperatures may be closely associated with comfort, and therefore involved in the learning process, they are seldom associated with any actual impairment of health or life.

Attention has been called to hazards in chemical laboratories. It is emphasized that exposure to toxic fumes, vapors, and gases may be an insidious and dangerous factor in many laboratories. The vapors or gases of hydrogen cyanide, hydrogen sulfide, mercury, carbon tetrachloride, and other halogenated hydrocarbons are mentioned as being especially dangerous.

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School Facilities Survey

The School Housing Section of the Office of Education in its first progress report of a national survey of school facilities indicated in 1952 that serious shortages and handicaps exist in many of our school buildings. Some of these shortages and handicaps are directly related to the health of the school child.

The study was made at the direction of the Eighty-first Congress under Title 1 of *Public Law 815*.

The first progress report contained data as reported from twenty-five states representing more than 11 million public school pupils of the United States, or about 44 percent of the total public school population.

It was found that approximately 27 percent of all children included in the report are housed in school buildings more than thirty years old. It was found that 61 percent of the classrooms do not have sufficient space for the number of pupils involved. Seventy percent of all the secondary schools surveyed did not have health rooms or medical suites. This was the greatest deficiency of special rooms found by the survey. When both elementary and secondary school plants were combined, approximately 85 percent did not have health rooms or medical suites.

A large number of school buildings were found to be combustible. Only 6 percent of the one-story buildings, 22 percent of the two-story buildings, and

32 percent of buildings three or more stories in height were found to be fire-resistive. On the other hand, 81 percent of the single-story schools, 34 percent of the two-story schools, and 26 percent of the schools three stories or more in height were composed of combustible materials.

Despite the fact that many schools were built of combustible materials, however, they were found to be acceptable as to fire safety in a large percentage of cases. Of all schools combined in the survey, approximately 63 percent were found to be acceptable as to fire safety, 17 percent possibly acceptable, and 20 percent were hazardous.

It was found that of the 11,293,744 pupils covered by the survey, approximately 3 percent were attending schools in which there were no toilet facilities and in which there was no water on the school grounds. Nearly 19 percent of the pupils were attending schools in which there were no sewage disposal facilities and approximately 15 percent were in schools where there were no fixed washing facilities. Seventeen percent of the pupils were attending schools with outdoor privies. Only 19 percent had access to showers for general pupil use although nearly half of the secondary school pupils did have access to such showers.

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The School Environment

Abel Wolman, Eng.D., and Wilmer H. Schulze, Phar.D., of Baltimore, Maryland, said in 1944 that to the extent that the architect, custodian, and principal understand and appreciate the requirements of a healthful environment, and to that extent only, will new schools and the major alterations to existing schools be designed and constructed to promote good and prevent ill health. Improvements and maintenance of existing schools should be planned likewise by superintendents, business managers, and other officials of the boards of education.

It is important that the school environment be planned to complement the hygiene program of the school and the health department. The problem is both medical and engineering. Where these services are available and interested, the health department can play a very useful and effective part in furnishing understanding and appreciation by translating health objectives into designs and specifications.

The minimum steps necessary to provide the satisfactory physical structure and equipment are as follows:

1. Survey of the school plants (master survey)
2. Yearly inspections plus co-operative assistance from the nurse
3. Definite reports and recommendations to be made at the right time in order to receive consideration when the budget is being planned

4. Approval of plans by the public health engineer, in consultations with the school architect
5. Preparation of specifications for sanitary equipment, such as fountains, siphon breakers, dishwashing equipment, new lighting systems, etc.
6. Active interest in the educational material used in teaching public health in the school

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Health in One-Room Schools of New England

Abbie M. Buck, director of the Child Health Education Service of the Maine Public Health Association, in 1942 reported on some of the health conditions in the one-room schools of New England at that time. It was stated that one-room schools still served 3,500,000 children in the United States.

South Dakota was reported as having the largest percentage of one-room schools, with 88 percent of its schools of this type in 1942. About 60 percent of the schools in Maine and Vermont were of the one-room variety. In New Hampshire 50 percent, in Connecticut 20 percent, and in Rhode Island and Massachusetts 12 percent of the schools were one-room types.

Visits to 132 rural schools in six New England states revealed such information as the following:

- 16.6 percent had cross lighting.
- 26.6 percent had no electric lights.
- 56.1 percent had no thermometer.
- 88.7 percent did not have temperature and ventilation adjusted daily.
- 50.8 percent had immovable seats.
- 30.4 percent were not orderly in regard to room conditions.
- 18.1 percent had no handwashing facilities.
- 18.1 percent had no soap.
- 18.1 percent had no towels.
- 11.3 percent had no drinking cups.
- 78.0 percent had dirt toilets.

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School Sanitation in North Carolina

John Andrews, chief of the sanitation section of the North Carolina State Board of Health, reported in 1952 that by co-operative action in that state the school and health officials were achieving great progress in providing healthful conditions in the public schools.

Sanitation is concerned with the physical factors affecting health, such as water supply, sewage disposal, preparation, storage, and serving of food in lunchrooms or cafeterias, lighting, ventilation, garbage and refuse disposal, adequacy of plumbing fixtures, elimination of rat harborages, and fly and

mosquito breeding areas, as well as the cleanliness of the school building and its surrounding in general.

In 1951 a School Sanitation Inspection Form was developed for use throughout the state of North Carolina. This form was developed by representatives of the State Department of Public Instruction, State Board of Health, and the School Health Co-ordinating Service. The inspection form is used by sanitarians of the local health departments who make school inspections.

During the school year 1951-52 a total of 2,494 school inspections were made, an average of slightly less than one inspection per school throughout the state. Ultimate plans call for the making of two inspections of every school each year: one in early fall after school opens and the other in the spring before school closes.

The School Sanitation Inspection Form does not stem from regulations or law but represents a co-operative effort on the part of school and health people to evaluate and improve the sanitation of public schools.

In recent years there has been a very great increase in school construction. Since plans for new school buildings involve many sanitation matters, a co-operative plan review procedure has also been worked out by health and education officials of the state. All plans are reviewed and constructive recommendations for improvement of sanitation features are made when improvements seem necessary. Special consideration is given to water supply locations and provisions for sewage disposal when a new school site is being considered. Sometimes proposed sites must be abandoned because conditions will not permit satisfactory sewage disposal plant installations.

High sanitation standards are essential in the school lunch program and lasting results are being achieved through the co-operative effort. A committee of seventy-five persons, including representatives of state and local health departments, architects, utility companies, food service equipment dealers, insurance departments, and school officials of various specialties and administrative levels, has provided advice on sanitation of school lunchroom facilities. Sanitary inspections of school lunchrooms are made by the local sanitarian from the Department of Public Health. After each inspection a placard is posted by the sanitarian which shows the grade attained by each school lunchroom. A sanitation grade of "A" indicates that a high level of sanitation is being maintained. Inspections of school lunchrooms are based upon the state law and regulations for restaurant and other public food establishments.

Harold L. Lautz of the Wisconsin State Board of Health said in 1952 that in Wisconsin nearly 70 percent of 4,000 or more one-room schools had unsafe

water supplies. A number of them had no water supplies at all. Along with this health hazard of impure water, slightly over 70 percent of these schools had inadequate and insanitary toilet facilities.

Public health engineers in the nine districts of the State Board of Health reported that many school wells were so poorly constructed that they were continuously or intermittently polluted by sewage or surface water. A great number of schools had no well on the premises, and water therefore had to be carried in cans, pails, or other containers from wells of questionable quality at near-by farms, cheese factories, churches, or taverns. The contamination that could be introduced through soiled containers and careless handling was an added hazard.

Water supplies for some schools were derived from open springs having insects and debris floating on the water surface. Rodent hairs were frequently pumped from some school wells. Surface water containing the excreta of birds and small animals flowed directly into some improperly protected school wells. Many wells which had been tested by the State Laboratory of Hygiene and found to be contaminated were still being used.

The large majority of outdoor privies at these schools were not fly-tight, rodent-proof, properly vented, or substantially constructed.

Responsibility for providing and maintaining adequate and safe sanitary facilities at the schools rested on the shoulders of the respective school boards. No state funds for the State Board of Health had been provided for a rural school sanitation program up to the time of this report.

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Sanitation in 253 Rural Schools of Connecticut

Warren J. Scott wrote in 1948 that a survey had been made of the water supply and sewage disposal facilities of 253 schools in 112 Connecticut towns which did not have water under pressure from a public supply.

Over 60 percent of the 253 schools were found to have sources of water located on the school property, directly under the supervision of the school authorities.

Almost half of the schools inspected had running water and most of these had electrically driven pumps which were satisfactory. Most of the hand pumps were of the force type with a packing nut at the top around the pump rod to prevent the entrance of any contamination. A few of the pumps inspected had a slot opening for the pump rod. This is a type of construction which is not approved by public health authorities, inasmuch as dirt, dust, or bird droppings may enter the well. There were only three pitcher pumps found; these pumps are unsatisfactory because of the large opening for the pump rod and frequently this type of pump must be primed, thus introducing the possibility of adding contamination. Three wells were equipped with a rope and bucket, an arrangement judged to be very unsatisfactory since not

only can contamination enter such wells through the top, but handling of the rope and bucket may introduce contamination.

Paper cups were furnished in nearly all schools where a dispensing tank was being used, although in some cases the supply of cups was not adequate and the pupils were required to keep them in their desks for re-use. At a few of the smaller schools the pupils kept individual glasses at the school.

Privies were found to be in use at 139 of the 253 schools inspected. Most of the privies were clean although some showed the need of daily scrubbing of the seats and sweeping of the floors. Water-flush toilet fixtures existed in 114 of the 253 schools.

At most of the schools outside the limits of public sewerage systems, septic tanks and subsurface seepage systems had been installed and were operating without nuisance. Many septic tanks, however, had not been inspected or cleaned for a number of years. Examination of a septic tank every two or three years is desirable so that it may be cleaned frequently enough to prevent the passage of solids through the tank and the subsequent clogging of the seepage system.

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Plumbing Hazards in Public Buildings

Charles H. Lawrance gave the results in 1948 of a survey, made by the Connecticut State Department of Health, of interior water piping hazards in two Connecticut cities.

The survey covered 415 public buildings of various kinds. Inspections were made by a trained sanitary engineer and were directed at the discovery of plumbing hazards within the buildings.

A total of 250 hazardous plumbing conditions were found in the 415 buildings. Submerged inlets, direct sewer connections, and cross connections were the leading types of plumbing hazards found, in that order. Implications for schools should be obvious.

The four primary types of hazardous piping conditions and their significance are indicated in the following paragraphs.

1. *Cross connections*.—A cross connection consists of piping which connects the public water supply with another supply, such as that from a well, cistern, or canal. The consumer can change the water from one source to the other by use of a motor pump and manipulation of a valve or valves. Usually this second water supply is unsafe and there is danger when this water mixes with that of the public water supply. If the water pressure in the public supply should drop because of a break in the water main or the use of a large amount of water for fire fighting or for flushing the main, then a vacuum might draw water into the public supply from the unsafe source.

2. *A back siphonage connection*.—This type of connection consists of a direct piping inlet into a liquid container, such as a toilet, vat, tank, or swim-

ming pool, where the inlet itself is below the normal or possible water level. If the public water supply pressure falls for any reason then water from the toilet, vat, or other container would be sucked back into the hitherto safe water and would contaminate it.

3. *A direct sewer connection.*—This type of connection occurs where a waste line (pipe) goes directly from a water tank or other plumbing device, such as a compressor, condensor, hydraulic pump, or hydraulic elevator, to the sewer. The danger is that the sewer may get plugged up and cause a backflow of sewage into the public water supply, thus contaminating it.

4. *An inadequately protected drinking water tank.*—This type of tank is one which is so poorly located that flooding or overhead sewers may contaminate the water supply. The tank may also be contaminated by animals or dust, or in some other manner.

244

Faulty Plumbing in a Midwestern School

Arthur E. Gorman reported in 1940 on an epidemic of gastrointestinal illness that occurred among the pupils in a large Midwestern elementary school.

There were about 50 percent more girls with the disease despite the fact that in the classes predominantly affected the distribution of boys and girls was about the same.

Back siphonage was suspected by the investigating sanitary engineer when he observed that water in the toilets and drinking fountain were supplied from the same pipe and that the toilet had side-spud connections with submerged inlets and flush-meter valves.

On investigation the sanitary engineer discovered that it was the practice in this school to drain the water system completely over each week end during the winter months in order to prevent the freezing of outside pipes.

The engineer marked the water level in each toilet bowl in the girls' lavatory, installed a gauge to measure any possible vacuum and poured a strong chlorine solution into each toilet bowl. After making these preparations the engineer instructed the school custodian to drain the water pipes in the usual manner. Within a fraction of a minute an 18-inch vacuum was recorded on a gauge and the water level in the toilet bowls dropped nearly an inch. Samples of water collected from the drinking fountain outside the girls' lavatory were tested with orthotolidin. This chemical changed the previous pale yellow color of the water from the drinking fountain to a brick red color. This was clear proof that the strong chlorine solution poured into the toilet bowls had reached the drinking fountain.

The drinking fountain outside the boys' toilet developed no vacuum or back siphonage because there was an "over the top" connection to an automatic flushing tank for a battery of urinals. This open connection served to

break any vacuum on the water system to the boys' toilets and explained why fewer boys had developed the gastrointestinal illness than girls. It could be expected that more girls would drink at the fountain outside their own lavatory than would be the case with boys.

245***Drinking Fountain Sanitation***

Arthur P. Hitchens and Oscar A. Ross reported in 1943 on a series of bacteriological studies of twelve bubbling drinking fountains.

Eight of the fountains were of the angle-jet cabinet types with built-in refrigeration units, one was an angle-jet type without refrigeration, and three were vertical-jet types without refrigeration.

Cultures were taken with sterile wet swabs of various parts of the fountains. After culture under standard conditions the drains were found to have an average bacterial count of 42,000 per milliliter, or 24 times that of the bowl and 50 times that of the nozzle.

Beta hemolytic streptococci were recovered from every part of all fountains. Experimental contamination of the fountains showed that bacteria remained from 30 minutes to 2 hours on the inoculated parts. Agar plates inverted at face distance showed that splashing is a source of infection, as the test organism was found on 14 of 17 plates. In another study tubercle bacilli were recovered from the fountain in a waiting room of a dispensary for the diagnosis of tuberculosis.

Although the foregoing experiments were not conducted in schools, the sanitary significance for the school environment should be obvious.

246***Drinking Habits at Fountains***

In 1942 officials of the Lily-Tulip Cup Corporation reported on the results obtained from a national survey of the drinking habits of people at fountains.

This study has significance for sanitation on school grounds as well as elsewhere in the community.

The corporation employed over 200 persons to tabulate the habits of drinkers at fountains on a standard survey form which had spaces for recording the location, type, and water pressure of the fountain, as well as the age, sex, color, lip distance of the drinker from the jet, and so on.

Observations were made in 35 states at 1,306 locations. A total of 48,000 persons were observed while drinking at the public fountains, more than half of which were of the old straight-jet type.

Regardless of type of fountain, 28 percent of the drinkers were able to get their lips on the jet or guard. People were observed to spit in the fountains, to rinse out their mouths, wash handkerchiefs, deposit chewing tobacco, gum, cigarettes, paper and other objects in the fountains. Children put dirty hands

on the jets, sick people used the fountains in various ways, some people washed their false teeth at the fountain, and others performed various other unsanitary practices at the fountain. Dogs were seen drinking at some fountains and birds roosted and bathed at others.

247

Bubble Fountain Victims

A bubble fountain in a new elementary school for 500 pupils in Massachusetts was found to be the source of an outbreak of trench mouth in thirty-eight pupils and three teachers in 1939. Prompt action by the director of school health and the school authorities brought to a halt what might have been a much more severe epidemic. The fountain was dismantled as part of the control measures that were put into operation to prevent further spread of the disease.

248

Dining Hall Epidemic

M. Allen Pond and John S. Hathaway reported in 1947 on an epidemic of mild gastroenteritis with nausea, vomiting, and diarrhea which occurred at school among students who ate regularly in the same dining hall. Of 156 students it was found that 41 percent suffered the disease.

School water was obtained from a public distribution system with break-point chlorination. No known pressure failures in the water system had occurred. Plumbing in the school was relatively new and was free of cross-connections. Daily bacteriological tests of the water were negative.

All milk used in the dining hall was pasteurized. There was thorough and practical refrigeration of the milk. There was no epidemic in a hospital which was supplied from the same milk source.

A study of menus in this epidemic focused attention on two meals at which potentially hazardous foodstuffs (cream puffs and chicken salad) were served in the dining hall used by those who became ill, but there were enough sick students who had not been present at these meals to rule out this possibility as the sole focus of infection.

A mechanical double-tank dishwasher was apparently in good working order and bacteriological analysis of utensils washed in this machine showed that good sanitation was being achieved.

None of the 11 full-time food handlers became ill, but 3 student employees were sick.

The first sick student was not a dining hall employee, but he roomed with a student who was such an employee and the latter was the second person sick in the epidemic. He did not handle food, but was responsible for drying dishes and silverware after removal from the dishwashing machine.

It is suggested that this student was the source of the infection and that

contaminated dishes or silverware served as the vehicle of spread. Further credence is given to this theory inasmuch as none of the 11 full-time employees became ill although they ate the same food as that which was served to the students. The employees' eating utensils were washed, dried, and stored separately from those used by the students and the student did not handle the employees' utensils.

249***Disinfection of Schoolroom Air***

Perkins, Bahlke, and Silverman reported in 1947 that studies in three centralized rural schools in New York State during an epidemic of measles indicated that ultraviolet irradiation of classroom air did reduce the spread of this disease.

School buses were shown in this New York study to be as significant or more so than classrooms in the spread of measles. In the irradiated classrooms 69 percent of the non-bus riders and 90 percent of the bus riders got the disease. In the nonirradiated classrooms 77 percent of the non-bus riders and 83 percent of the bus riders got the disease.

250***Ultraviolet Light and School Absences***

Drs. Gelperin, Granoff, and Linde of New Haven, Connecticut, reported in 1951 on an attempt to control respiratory tract infections by ultraviolet irradiation of the air in classrooms of eight New Haven public grade schools. Control data were available on the remaining twenty-eight public grade schools.

Of the eight schools studied, all classrooms of two were irradiated by three 30-watt ultraviolet lamps so that a ceiling of rays was constantly maintained at a 6.5 foot level. In the other six schools, rooms containing approximately half the school population were similarly irradiated, and all others were "treated" with blue light from fluorescent tubes which emitted no rays in the ultraviolet spectrum. Kindergartens were excluded from the study.

Tabulation of absences due to respiratory tract infections during the four-and-a-half month period of irradiation in the six internally controlled schools showed no advantage for the irradiated classrooms, and no advantages, as compared with the control schools, were noted in the two schools with all classrooms irradiated.

251***Ventilation Versus Irradiation***

Mildred Weeks Wells reports that in Philadelphia studies have shown that the school ventilation standard of 30 cubic feet of air per minute per child is both difficult to attain and inadequate to prevent classroom spread of chickenpox and measles except in relatively immune classes.

In the Philadelphia studies, when radiant disinfection of air by ultraviolet lamps was substituted for actual air replacement, the spread of chickenpox, measles, and mumps was reduced. The specific percentage of reduction appeared to depend upon the ratio of immune to susceptible children in the classrooms (e.g., if less than 20 percent in the class can get measles, then adequate ventilation appears to be as effective as irradiation; the same conclusion was apparent if less than 40 percent are susceptible to chickenpox) and on the humidity of the classroom air.

Other classroom conditions—a playhouse in the room (kindergarten), draping of lights for festivals, and so on—may decrease the value of ultraviolet lights.

252***Chemical Vapors and Ultraviolet Light
Not Yet Recommended***

Roy Schneiter, Ph.D., of the Division of Industrial Hygiene of the Public Health Service, reported in 1950 that independent committees of the American Public Health Association and the National Research Council have reviewed the results of research in the field of prevention of the spread of respiratory diseases in schools, office buildings, and other public places by the use of certain chemical mists, vapors, and ultraviolet light.

It is the conclusion of these committees that the general use of ultraviolet irradiation or disinfectant vapors in schools, barracks, and industrial environments is not justified at the present time.

It is admitted that both ultraviolet light and the glycol vapors have pronounced properties for destroying bacteria under controlled experimental conditions. However, present knowledge is too limited to make definite claims or predictions concerning their ability to reduce air-borne infections.

Under controlled conditions, it has been demonstrated that concentrations of 0.25 to 0.5 mg. of propylene glycol or 0.01–0.005 mg. of triethylene glycol, per liter of air, exert a rapid and deadly action against a wide variety of air-borne infectious agents. This activity apparently depends on hygroscopic properties. Such vapors are most effective at relative humidities between 30 to 35 percent, and the action increases as the atmospheric temperature is increased. Dust, dirt, and lint in the air reduce the activity of the glycols.

The action of ultraviolet light (2,537 angstroms) in destroying bacteria, although influenced by many factors, has been well established under controlled experimental conditions. Effectiveness decreases rapidly with increasing humidities above 55 to 60 percent. Ultraviolet light is also injurious to both men and animals. Its effectiveness is greatly reduced in the presence of dust, dirt, and oil films. Particularly when they are new, ultraviolet lamps of the type used for air disinfection may also produce ozone in objectionable concentrations.

Since direct radiation of sufficient intensity kills microorganisms in the air, it is also harmful to the eyes and to the exposed skin of human beings. For this reason, radiation must be restricted to the upper air or to limited applications which do not involve human exposure. Otherwise, it would be imperative for human beings to wear protective clothing, masks, and goggles.

253

School Lighting

Miles A. Tinker, of Minneapolis, in an article prepared at the request of the Advisory Committee on Ophthalmic Devices of the Council on Physical Medicine and Rehabilitation of the American Medical Association, said in 1950 that careful analysis of the experimental data employed as a basis for recommended light intensities in the schools reveals in many instances either misinterpretation of data or invalid experimental procedures.

Examination of the available data indicates that the major gains in visual acuity have occurred by the time an illumination of 20 foot-candles is reached.

Critical levels of illumination have been determined for a number of seeing tasks. The critical level of illumination is the intensity beyond which there is no statistically significant increase in efficiency of performance as the foot-candles become greater. The following tabulation lists some of these critical illumination levels.

Seeing Tasks	Foot-Candles
Reading legible print (10 point).....	3 to 4
Reading and study of children.....	4 to 6
Arithmetical computation	less than 9.6
Setting 6-point type by hand.....	20 to 22
Threading a needle	30
Reading newsprint	7
Recognizing letters in 3.5 point type.....	between 15 and 20

Critical levels, of course, are not adequate levels of illumination. How much illumination must be added to the critical level to provide a margin of safety is not certain at this time. It would seem, however, that the addition of 10 to 15 foot-candles to the critical levels should be adequate in ordinary seeing situations such as reading large book type (10 to 12 point). For the more exacting visual tasks, perhaps one should add 20 to 25 foot-candles. There is no reason to conclude that more than 50 to 60 foot-candles are required for even the most exacting visual tasks of everyday life.

In regular classrooms, offices, study rooms, libraries, and the like, an intensity of anywhere between 20 and 30 foot-candles should be adequate. Where more exacting visual work is to be done, as in mechanical drawing and sewing, around 35 to 40 foot-candles will be found satisfactory. In other parts of the school building less intensity is needed. Thus, about 15 to 20

foot-candles in gymnasiums and around 10 foot-candles in auditoriums and cafeterias will be satisfactory. Not less than 5 foot-candles should be used in halls and stairways.

For best vision the brightness ratios between the central field and the surroundings should not exceed three to one. It is important that these ratios do not exceed five to one, and in no circumstances should they be greater than ten to one.

Reflection factors for various areas should approximate the following specifications: ceiling and strip of wall near ceiling, 80 to 85 percent; rest of walls, 50 to 60; wall space between windows, including window frame, 75 to 85; doors, 30 to 40; desk and table tops, 35 to 50; and floors, 15 to 30. It should be added that there ought to be an area twenty-four to thirty inches wide of intermediate brightness surrounding dark blackboards, that is, about 25 percent reflection factor. This could well be a tackboard.

Schools should be illuminated so that effective and comfortable vision is possible. Furthermore, the school environment should be pleasing. The intensity of light should be adequate for the various visual tasks. One cannot depend on the recommendations of intensities given in bulletins on standard practice. Controllable glare should be eliminated, and brightness ratios within the visual field should be kept within satisfactory limits.

254

Fluorescent Lighting Not Harmful

The Council on Industrial Health of the American Medical Association indicated in 1945 that fluorescent lighting has been regarded by some physicians and other nonmedical men as possessing harmful qualities not found in other forms of artificial illumination or in daylight. Both the ultraviolet and infrared components have been suspected. The Joint Committee on Industrial Ophthalmology, after consultation with specialists in the production and use of light, expressed the following opinions:

1. The ultraviolet energy from clear, blue, summer skylight is three to four times as great per foot-candle as fluorescent light.
2. Light from fluorescent lamps resembles daylight more closely than that from tungsten lamps. This color resemblance to daylight is a desirable quality.
3. Infrared energy found in fluorescent lighting as now manufactured produces no known physiologic effect except that due to heating. Fluorescent light generates less heat per candle power than tungsten lamps.
4. Glare occurs in any system of lighting. Its solution rests with illuminating engineers.
5. Individual differences occur in the level of illumination (foot-candles) required to provide a satisfactory degree of visual efficiency and eye comfort.

Twenty foot-candles are essential for such critical tasks as reading. Higher levels of illumination are desirable for prolonged seeing, for discrimination of fine details, and where low contrast prevails. These standards can be readily maintained in working places through use of properly installed fluorescent lighting.

6. Regardless of source, excessive light may produce symptoms of eye-strain in susceptible individuals. Constitutional factors should be corrected as well as the amount and kind of light.

7. Noticeable flicker is largely eliminated in modern fluorescent installations.

Fluorescent light is not harmful to vision. It should not cause eyestrain if properly installed and used.

255

Toilet Facilities in Schools

The American Council on Education reported a study in 1942 on the utilization of toilet facilities in 19 elementary schools, 6 consolidated schools, and 15 high schools, with pupil enrollments ranging from 160 to 3,899 pupils. The study showed that during the *period of maximum utilization* the ratio of actual use to the number of pupils varied as follows:

Boys' toilets: 1/456 to 1/45 (one toilet used per 456 boys in one school to the other extreme of one toilet per 45 boys in another school.)

Girls' toilets: 1/110 to 1/9

Boys' urinals: 1/87 to 1/13

Boys' lavatories: 1/404 to 1/26

Girls' lavatories: 1/418 to 1/21

On the basis of this study the American Council on Education recommended the following ratios:

1 urinal for every 30 boys.

1 girls' toilet for every 35 elementary school girls.

1 girls' toilet for every 45 high school girls.

1 lavatory in the elementary school for every 60 pupils.

1 boys' toilet for every 100 boys.

1 lavatory on the secondary level for every 100 high school pupils.

The American Council on Education recommends the foregoing ratios with the exception that not less than 2 fixtures be in each toilet room.

256

School Regulations on Heating and Ventilation

The New York State Department of Health pointed out in 1946 that heating systems should be so designed and guaranteed that, when properly

installed and operated, they will meet the following standards for thermal environment during the heating season.

Type of Space	Design Operative Temperature (Fahrenheit)	Corresponding Room Air Temperature (Fahrenheit)
1. Secondary activity, as for example classrooms, auditoriums, offices, cafeterias.....	70°	68°-72° (30" above floor)
2. Moderate activity, as for example in corridors, stairways, shops, laboratories, kitchens....	68°	66°-70° (60" above floor)
3. Vigorous activity, as for example gymnasiums	65°	60°-70° (60" above floor)
4. Special cases—lockers and shower rooms.....	78°	76°-80° (60" above floor)
5. Swimming pool area	83°	80°-86° (60" above floor)

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Fuel Oil Rationing and the Control of School Temperatures

The American Medical Association offered in 1942 an abstract of a report from a subcommittee of the Fuel Rationing Division of the United States Office of Price Administration, headed by Leverett D. Bristol, M.D., of New York. This report considered the health aspects of fuel rationing as worked out by medical, public health, and ventilating engineers. Parts of the report applied to school situations.

An ideal temperature, irrespective of humidity and air motion, does not exist, nor does a safe minimum temperature exist without these influencing factors. The following, without regard to other factors, may be considered minimum temperatures for emergency requirements of fuel oil rationing:

1. For the average private home, 60-68 degrees F. (majority opinion, 65 degrees F.).
2. For the average apartment house, 60-68 degrees F. (majority opinion, 65 degrees F.).
3. For hospitals and sanatoriums, 68-80 degrees F. (majority opinion, 70 degrees F., except operating rooms, 80 degrees F.).
4. For schools, 60-70 degrees F. (majority opinion, 65 degrees F.).
5. For department stores, office buildings, and so on, 60-68 degrees F. (majority opinion, 65 degrees F.).

Indoor temperatures of dwelling places, hospitals, schools, stores, and offices must vary according to the conditions and activities of the occupants and the specific uses to which the various rooms are put.

Thermostats should be properly adjusted and reconditioned and should be subject to the supervision and manipulation of one rather than several persons. Simple daily records of indoor temperatures should be kept.

258***Room Temperatures and Health***

One problem in schools is the maintenance of a healthful school environment. The exact role of schoolroom temperatures in determining the health of the pupil is difficult to ascertain. During World War II it was necessary to ration fuel oil and some fear was expressed that this would result in colder living or work environments that would seriously impair health. Pertinent to this problem is a study reported in 1943 by Joel Dean, director of the Fuel Rationing Division of the Office of Price Administration.

On February 23, 1943, a letter was sent from the Fuel Rationing Division of the O.P.A. to representative health officers requesting information as to (1) how fuel oil rationing had affected public health, (2) what changes in the regulations were recommended from that point of view, and (3) whether a general conference of public health officials should be convened to discuss revision of the rationing plan. Replies were received from city, county, and state officers of nineteen states and the District of Columbia.

The replies from the nineteen states and the District of Columbia, while frankly reporting some hardship cases and offering some adverse criticism, indicate clearly that, in the nearly unanimous judgment of the responding authorities, no impairment of public health resulted from rationing fuel oil.

Tabulation of the replies shows the following effects on public health:

- 10 percent reported deaths allegedly due to lack of fuel oil as cause or contributory circumstance but indicated that this was doubtful and had not been investigated.
- 25 percent stated positively no such deaths had occurred.
- 65 percent did not report any deaths.
- 15 percent reported considerable illness.
- 25 percent reported some illness due to lack of fuel oil.
- 45 percent stated positively that no illness had been caused by rationing fuel oil.
- 15 percent stated that decreased household temperatures had improved public health.
- 100 percent did not report epidemic situations.

Dangers in Chemical Laboratories

Robin E. Moser called attention in 1948 to the fact that it is commonly recognized that people who work in chemical laboratories are exposed to such obvious hazards as cuts from broken glass, burns from caustic substances, and explosions. But it is not sufficiently emphasized that there exists another hazard more dangerous because of its being insidious. This hazard is that caused by exposure to toxic fumes, vapors, and gases.

Two of the most dangerous gases encountered in chemical laboratories are hydrogen cyanide and hydrogen sulfide. Although these gases are about equally dangerous, hydrogen cyanide is properly respected by everyone who has ever heard the name, whereas hydrogen sulfide is hardly known except for its distinctive odor, and no attempt is made to detect its presence except to rely on the principle that "the nose knows." This is a dangerous fallacy. Although the odor of hydrogen sulfide is noticeable in very small concentrations, larger amounts paralyze the olfactory nerves.

If inhaled 15 to 30 minutes, concentrations of 0.05 percent are extremely dangerous, causing severe irritation to eyes and respiratory tract. Fatality may result from pneumonia and lung damage. Amounts of hydrogen sulfide of 0.1 percent or higher cause immediate unconsciousness and death due to respiratory paralysis unless artificial respiration be applied at once. An accident at Princeton University in which two men lost their lives should serve as a warning to others who may come in contact with this gas.

Nearly all laboratories use mercury in considerable quantities. Whenever liquid mercury is exposed to the air, vapors escape. Concentrations of mercury vapor of 0.1 milligrams per cubic meter when inhaled constantly throughout the working day for an extended period gradually cause the individual to develop symptoms of mercury poisoning. The first symptoms are nervousness and irritability. Exposures to higher concentrations of mercury vapor cause such symptoms as discoloration and mouth sores or drying of the mucous membranes. Very serious exposures may cause nausea and diarrhea.

In chemical laboratories volatile organic solvents are frequently used. The danger of the inflammability of many of these is obvious, but the hazards due to inhalation or skin contact of many of them is only slightly recognized. Constant inhalation of air containing only 0.01 percent of benzene interferes with blood formation and anemia develops. Less serious but still dangerous symptoms are fatigue, headache, debility, and gastrointestinal disturbances. In laboratories, the exposure to benzene is likely to be intermittent but if repeated often the results may be similar.

The vapors of carbon tetrachloride, while not inflammable, are very toxic. Continuous exposure to air containing carbon tetrachloride in concentrations over 0.005 percent may produce liver and kidney damage. Exposure to higher concentrations for short times may result in acute poisoning, with

nausea, headache, and stupor, or even unconsciousness and death. It must also be remembered that when carbon tetrachloride or other halogenated hydrocarbons come in contact with flames or heated surfaces, extremely toxic phosgene gas is formed.

Teachers and students of chemistry, as well as all other chemical laboratory workers, should bear in mind that nearly all gases and vapors are more or less toxic. All who work with them would be well advised to use them only under fume hoods, or if these are not available, to have the laboratories well ventilated.

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Mercury Hazard in School Laboratory

Officials of the California Department of Public Health said in 1945 that exposure of employees of a university laboratory to hazardous quantities of mercury vapor was found by the Bureau of Adult Health, in a study requested by the university authorities.

The principal exposure in the laboratory was in the accumulation of mercury in the sinks where waste globules produced sufficient mercury vapor to bring the concentration in the air above the legal limit of 0.10 milligrams per cubic centimeter of air.

Mercury spilled on laboratory benches and deposited in the cracks of floors and cabinets did not, in this laboratory, appear to be an appreciable health hazard.

Chapter XIV

School Safety

Statistics show that more than 6,000 school children lose their lives from accidents each year in the United States. For some years accidents have led all other causes of death in the school age group in this country. This indicates clearly that schools have a major responsibility not only to protect the student within the school environment but to arrange learning experiences in safety that will protect him and others in multiple out-of-school relationships.

A study of injuries among 28,878 students at the secondary school level in Oregon shows that during a single school year approximately 6 percent of a high school population will be accidentally injured. Physical education classes more than doubled all other organized and unorganized school activities combined as a source of accidents in this study.

There is still some legal confusion regarding the financial obligation of school districts, trustees, administrators, and teachers in relationship to the injury of pupils. On the other hand, the rule is universal in the United States that a teacher, principal, superintendent, or other employee of the school board is liable for his or her own negligence. The dominant principle of law is that the school board is not, in the absence of a statute, subject to liability for injuries suffered by pupils. Such immunity does not protect the teacher, however, if the latter is guilty of negligence. Court cases and legal decisions for injuries received in physical education activities indicate that school administrators and physical educators should be especially diligent in applying all possible controls for safety in athletics and physical activities.

Suggestions have been made for the initiation of a school safety program.

A national authority in the field of safety education expressed the belief in 1947 that New York City had the best safety activity program of any large city in the country. The program in New York integrates safety instruction with traditional classroom subjects and also provides time each week for safety discussion alone in the elementary and high schools.

An effective and functional plan for the reporting of safety infractions in an elementary school has been reported from Hazel Park, Michigan.

It was reported in 1952 that approximately 18,000 schools in over 9,000 communities had more than half a million safety patrol members protecting their classmates from traffic accidents. It has been calculated that within a period of ten years the lives of more than 25,000 children have been saved in the United States as a result of safety education.

The question of legal authority for school safety patrols has been discussed. By 1954 New Jersey and Massachusetts had legalized the school safety patrol by statute. It is urged that when schools offer a safety patrol they should do

so with the co-operation of the local police department and that every precaution should be exercised to protect school patrol members from injury.

In Milwaukee a safety commission reports on the experience of the use of women school crossing guards at major street intersections on the route to nearby schools. These guards were given one week of intensive training in the Milwaukee Police Training School and then assigned to their duties. The women guards proved that they could take the place of veteran police officers in moving school children safely across heavily traveled streets.

It has been emphasized that school safety patrol activities should be carefully evaluated and intelligently planned to achieve best results.

In Fresno, California, a safety engineering study of 22 school crossings has given specific criteria by which to judge the safety of such intersections.

Attention has recently been focused on different kinds of playground surfacing from the standpoint of safety. Playground accidents and deaths have created widespread discussion in some communities. In Los Angeles, however, a study of schoolground accidents over a period of 21 years suggests that the type of surfacing had very little to do with the severity and frequency of accidents. In Yakima, Washington, a study of playground accidents over a period of three years indicates that if rocks and pebbles are kept off the hard playground surface that accidents will be reduced.

School bus safety has begun to receive greater attention. In 1951 there were 39 deaths of pupils from school bus accidents in 34 states. Other deaths associated with the school bus brought the total in these states to 50 deaths and well over 1,000 injuries. Of school bus passengers who lost their lives during this year, 56 percent were killed while crossing highways to board or after alighting from a school bus.

Compulsory driver education continues to receive greater attention in the United States.

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Accidents Are Chief Killers of School Children

Statisticians of the Metropolitan Life Insurance Company called attention in 1946 to the fact that accidents take the lives of about 6,500 school children a year in the United States. Although the death rate from accidents among youngsters has declined markedly in recent decades, the reduction has not kept pace with the decline from disease. As a result, accidents are now the leading cause of death among school children.

Points of attack that might result in lowering the fatal accident rate among school boys and girls are suggested by an analysis of the information given in the death claim papers of children, 5 to 14 years of age, insured in the Metropolitan Life Insurance Company's Industrial Department, who died by accidental means in 1945. Motor vehicle accidents accounted for 185 deaths. The great majority of these motor vehicle accidents occurred while the young-

sters were crossing the street or highway, or while they were playing in the road.

Drownings were responsible for nearly one-fourth of the accidental deaths among the insured children. A study of the circumstances surrounding these drownings makes it clear that campaigns to prevent drownings should not be confined entirely to swimming, wading, and boating activities, although these account for the largest number of deaths in this category. Nor should efforts in this field be confined to the summer season. Almost one-fourth of those drowned were reported to have fallen into the water while playing at the edge of the water, on a rock ledge, dock, bridge, guard rail, or overhanging tree. Several of the youngsters lost their lives when they fell through thin ice on ponds or lakes. About one-fifth of the drownings occurred outside the water sports season.

It is clear that younger children still play with matches despite the widespread effort that has been made to impress upon parents the danger involved. A number of children succumbed to burns suffered while playing with or near inflammable liquids.

Firearm accidents played an important role in the toll among boys at the school ages. Forty-eight of the fatalities among boys, or nearly 10 percent, resulted from shooting accidents. Playing with, examining, or showing guns to companions were common causes of accidents of this kind.

Nineteen of the insured youngsters were killed in accidents on railroad right of ways, and of this number, seven were killed while walking along or playing on tracks. Two of the victims were actually sitting on the tracks and watching trains pass.

It is outstandingly clear from the analysis here presented that many children could be saved from accidental death if parents kept closer watch over them.

Accidents in Oregon High Schools

Frank B. Haar and Don B. Martin, of the University of Oregon, report a study of injuries occurring to Oregon secondary school students who were insured by the Student Mutual Benefit Plan during the 1948-49 school year.

Among the 28,878 insured students in this study, 1,815 injuries were reported, an injury ratio of 6.2 per 100 insured students.

Physical education classes, with 52.9 percent of the total injuries, more than doubled all other organized and unorganized school activities combined as a source of accidents.

Other sources, in order of frequency, were: school building, 13.8 percent; school grounds, 7.7 percent; shop, 6.3 percent; travel to and from school, 5.2 percent; classroom, 3.6 percent; noon-hour activities, 3.3 percent; extra-

curricular activities, 2.3 percent; intramurals, 2.0 percent; and dressing rooms and showers, 1.7 percent.

Sprains, accounting for 31.3 percent of the total, were the most common type of injury. Contusions were second, accounting for 24.5 percent. Fractures and lacerations were responsible for 13.3 and 12.6 percent respectively. Other frequent types of injuries, or their complications, were: infections, 4.6 percent; strains, 3.3 percent; abrasions, 3.0 percent; foreign objects in the eye, 2.1 percent; dislocations, 2.0 percent; and hematomas, 1.4 percent. Miscellaneous injuries not otherwise classified accounted for the remaining 1.8 percent of the total injuries.

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Legal Liability in Schools

Donald P. Guenther, of the University of California at Los Angeles, reported in 1949 that confusion exists in the minds of many educators regarding the legal obligation of school districts, trustees, administrators, and teachers in the injury of pupils.

The rule is universal in the United States that a teacher, principal, superintendent, or other employee of the school board is liable for his or her own negligence. The dominant principle of law in the United States is that the school board is not, in the absence of a statute, subject to liability for injuries suffered by pupils. The state is immune from liability and this immunity is transferred to the school board. Such immunity, however, does not attach to the teacher, and therefore a teacher is liable for his or her own negligence.

Most attorneys know that teachers ordinarily are not in a financial position to pay damages. The statutes of most states do not give the school board the right to use school money for paying persons who have received injuries. Where this has been done, it has been done illegally.

Mr. Guenther suggests that one solution may be a statute requiring school boards to take out liability insurance. At present, very few states have such an arrangement. The most adequate means of protecting the teacher from financial obligation or liability would seem to be to provide an insurance system similar to the athletic insurance benefit plans now being offered by state high school athletic associations.

School boards should hold their employees responsible for proper inspection of equipment and elimination of potential hazards in so far as practicable. They should insist that building codes be revised to provide adequate safety in new structures and that dangerous parts of buildings be remodeled to conform with modern requirements. The school board should insist that obsolete and dangerous equipment be replaced with modern, properly guarded equipment; and finally, they should advocate a policy whereby the school would carry accident insurance or the state would provide funds covering those who are temporarily or permanently injured.

School Liability for Physical Education Accidents

Nathan Doscher and Nelson Walke, of Brooklyn College, New York, reported in 1952 that a review of legal decisions pertaining to the liability of the school for accidents occurring in physical education activities indicates that educators should understand that the best way to avoid serious financial obligation because of decisions in accident cases is to act in a careful manner.

This means applying all the controls for safety in athletics rather than attempting to avoid lawsuits by getting parents to sign statements by which they waive all rights to damages in cases of injuries in athletics to the pupils who participate.

Courts have declared that any statement that the school child signs is not valid. Minors cannot sign away their legal rights. Parents can sign away their rights to damages but the child can sue nevertheless.

Attempts on the part of school authorities to avoid legal suits by obtaining the signatures of parents and school children have no influence in producing a safe, healthful athletic program. In fact, legislation in some states has made it very plain that safety rules must be applied if physical education activities are to be continued in the schools.

Schools should have no fear of being prosecuted and held liable for every little accident that occurs. The courts will reason and determine negligence on the facts and the case. If the school authorities have done everything a prudent person would have done under the circumstances, then there is little to worry about legally. A school administration that abides by the law and regulates play situations in an effort to achieve safe play, maintains proper facilities and equipment, and provides capable leadership to train children in safe habits during sports and games, is not acting in a negligent manner.

Starting a School Safety Program

Wendall A. Parris, assistant director of health, physical education, and safety for the public schools of the District of Columbia, said in 1952 that to start a school safety program in elementary schools, it is advisable to:

1. Establish clearly the objectives of safety education. This should precede the actual teaching practices.
2. Develop an interest in the problem on the part of the participating teachers.
3. Name a school safety co-ordinator for each individual building.
4. Develop pupil interests and activities.
5. Organize a safety council to meet weekly with the co-ordinator, organize programs, issue bulletins, and so on.
6. Make a survey of accident hazards on the school grounds and in the community. This survey should be based upon pupil participation and should

cover halls, stairways, grounds, playgrounds, street intersections, and other locations.

7. Establish an accident reporting system. A Standard Student Accident Report form can be obtained free from the National Safety Council.

8. Arrange field trips for the observation of safety practices, such as those involved at a traffic signal, fire station, and so on.

9. Develop instructional aids and procedures such as exhibits, posters, assembly programs, bulletin boards, demonstrations, and field days.

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Safety Education in New York City

The lives of more than 25,000 children were saved in ten years as a result of safety education in American schools, according to Dr. Herbert J. Stack, director of the Center for Safety Education at New York University.

Dr. Stack expressed the belief in 1947 that the new curricula for elementary and high schools in New York would give that city "the best safety activity program of any large city in the country."

The program integrates safety instruction with traditional classroom subjects and also provides time each week for safety discussion alone. As examples of integration with other subjects, Dr. Stack said home-making classes stress household hazards, chemistry classes discuss fire and fire prevention, and civics classes emphasize traffic safety.

267

Safety Reporting in United Oaks School

Genevieve Conley reported in 1951 that the United Oaks School in Hazel Park, Michigan, operated—in reporting pupil disturbances and infractions of safety rules—a system by which members of the safety patrol would take such children who needed correction or counseling on safety habits to a safety sponsor as soon as school was in session.

This system had four main handicaps. A number of children were absent from their regular classrooms, crowding of the hallways in front of the safety sponsor's room was commonplace, many pupils returned to classes belatedly, and major efforts at correction of poor safety habits were centralized in the safety sponsor instead of other faculty members and pupils carrying their share of the responsibility.

A new plan for reporting of safety infractions was developed whereby the safety patrol members and the safety sponsor compiled two lists, one of which emphasized good citizenship and desirable safety habits while the other indicated undesirable safety behavior of one kind or another.

These lists were worked into a report form similar to a traffic ticket, one of which was a good conduct report, the other a citation for the breaking of some safety rule.

Under this new system the safety patrol members filled out the forms, which were tabulated by the safety captain and then placed in the appropriate teacher's mailbox. Teachers in each classroom were thereby given a certain measure of responsibility for handling such cases and signing reports after discussion of the problem with the pupil. The safety sponsor, teachers, patrol members, and other school personnel have agreed the system works fine.

The two traffic ticket forms are reproduced as follows:

GOOD CONDUCT REPORT

Date.....

I wish to report.....
of room for the following conduct becoming to a United Oaks citizen.

- Taking over responsibility
- Doing more than one's share
- Helping younger children
- Showing a good example
- Other reason

Remarks:
.....
..... Teacher

FORM FOR OFFENSE

Date.....

I wish to report
of room for the following misconduct.

- Jay walking
- Riding double
- Running across street
- Misuse of playground equipment
- Throwing snowballs
- Riding bicycle on playground
- Pushing in line
- Fighting
- Neglect of duty
- Other reason

Remarks:
.....
..... Teacher

268***School Safety Patrols—I***

Few projects of the American Automobile Association have met with greater public response and acclaim than its sponsorship of school safety patrols.

In 1952, at some 18,000 schools in over 9,000 communities, more than 500,000 patrol members were protecting their classmates from traffic accidents.

It is significant that the Post Office Department has paid tribute to the school safety patrol by issuing a commemorative stamp.

Accidents in other age groups have soared to dizzy heights. Accidents among children have decreased over the same years in which adult accidents were mounting by thousands. The reason for this decrease lies in the safety work of the schools.

The movement has grown. It has been adopted in South America, where many of the schools are using textbooks of the American Automobile Association that have been translated into Spanish. The school safety patrol is rapidly becoming a world-wide organization saving thousands and thousands of lives.

269***Legal Authority for School Safety Patrols***

Fred Swalls, professor of education at the Indiana State Teachers College, in discussing legal authority for the regulation of pupil conduct, said in 1954 that New Jersey and Massachusetts have legalized the school safety patrol by statute.

In Indiana, although there is no statutory authorization for schools to organize and operate safety patrols, the attorney generals have expressed legal opinions on the matter. As early as 1929 the Indiana attorney general stated that it was within the authority of school trustees, superintendents, or principals to organize safety patrols and that school officials could not be held liable in case of accident to one of the children in the operation of the system. On June 1, 1954, another attorney general released an opinion on school safety patrols in which the 1929 opinion was reaffirmed in many respects.

The more modern opinion, however, pointed out that it is primarily a duty of the police department to provide for the safety of persons on the streets and highways and that most school safety patrols were operated under a police officer who delegated some functions to the principal of the school. This principal, in turn, assigns a teacher the duty of directing the safety patrol. If such teachers are negligent in their duties they may be held liable in case of pupil injury.

When schools operate safety patrols they should do so with the co-operation of the local police department and every precaution should be exercised to protect school patrol members. In rural areas the help of the state police should be sought.

270 *Women Guards at School Crossings in Milwaukee*

B. L. Corbett, executive director of the Milwaukee Safety Commission, reports that Milwaukee school children cross 512 major street intersections when going to and from school.

Eighty of these crossings are protected by automatic signals, 286 by school safety patrols, and 110 by police officers assigned during assembly and dismissal periods. The Milwaukee Safety Commission, after an extensive study of the problem, recommended the establishment of women school-crossing guards. A set of qualifications was prepared, as was a list of suggested duties and a training program. The Commission was authorized by the City Council to proceed with the hiring of 75 school-crossing guards in the fall of 1949. These guards were given one week of intensive training in the Milwaukee police training school and then assigned to their duties.

The Milwaukee school-crossing guards are equipped with uniform caps, white Sam Browne belts, uniform overcoats, standard police badges, and whistles. Assignments, as far as possible, were made to intersections nearest the school-crossing guard's home.

Women showed that they can efficiently take the place of veteran police officers in moving school children safely across heavily traveled streets. They have also shown that they can stand on street corners in all kinds of weather. During the winter of 1950-51 in weather 24 degrees below zero not one guard failed to report for duty because of these sub-zero conditions.

When school-crossing guards have sworn out a warrant for the arrest of a violator, convictions have been 100 percent.

It has been Milwaukee's experience that the woman school-crossing guard is the most practical and economical solution to the problem of adequately protecting school children. Owing to public demand the number of guards was increased to 100 by the Common Council in January of 1951.

271***School Safety Patrols—II***

Wilbur A. Yauch, head of the Department of Education at Northern Illinois State Teachers College, says that the organization of a group of older children to help the younger children observe good traffic regulations often has several basic weaknesses.

In the first place, the organization of a safety patrol begs a prior question: whose job is it to see that children going to and from school are guarded from traffic hazards?

It seems reasonable to assume that this responsibility naturally belongs to the civil government and is not directly a school responsibility.

Second, teachers should examine more carefully the consequences of placing some children in authority over others. What is it going to do to the

children who are being controlled? What personality effect does it have on those doing the controlling? Are we delegating to children a responsibility which the most expert teachers find difficulty in meeting?

Third, children's responsibility should be restricted to the level of their abilities so that real growth can take place. Asking a child who has not yet learned to live intelligently to guide the growth of other children in this direction is like asking the blind to guide the blind.

A fourth weakness of the safety program is that the responsibilities of the average classroom teacher are overwhelming.

After seventeen years as an elementary school principal, Mr. Yauch worked out with his teachers a program of activities in safety education for the entire school. With this curriculum designed as a guide, each teacher worked out with his children a series of experiences calculated to develop an ever-increasing awareness of the importance of safety, including intelligent behavior in crossing the street. Some aspects of the safety patrol were incorporated in the classroom programs, but these were restricted to those experiences which each teacher could personally supervise.

272

School Crossing Hazards

Robert D. Dier, of Long Beach, California, said in 1952 that the safety of school children at pedestrian crossings should be of sufficient concern to public officials and school authorities that they encourage regular surveys of hazardous conditions.

In Fresno, California, Mr. Dier, a traffic engineer, participated in a comprehensive survey of twenty-two school crossings. As a result of his investigation five of these crossings were judged to be sufficiently dangerous to justify four-way stops, traffic-signal installations, and provision of adult guards.

The following factors were taken into account in the Fresno studies: (1) the actual width of pavement in which pedestrians are vulnerable to passing traffic; (2) the average time interval, in seconds, necessary to clear large groups of children from the street pavement and path of approaching vehicles; (3) the average walking speed of adults or children, in feet per second; (4) the 80 percentile velocity of vehicles as recorded on the street, in feet per second; (5) the average time interval in seconds required by a pedestrian, waiting at the curb, to look in both directions along a street, analyze the hazard situation from vehicles, and commence walking across the street; (6) the theoretical safety yardstick, representing the distance, in feet, a vehicle would have to be from the crossing to permit a safe passage across the street.

273

Playground Accidents in Los Angeles

Cecil G. Zaun, supervisor of safety for the Los Angeles City Schools, says that the use of blacktop on play areas is the outgrowth of a long search to

find a smooth, level, all-weather surface that will provide traction, freedom from injurious dust, and a means by which play areas can be adequately and permanently marked to avoid congestion.

Publicity given to schoolground accidents has created a serious problem for boards of education throughout the United States today, according to Mr. Zaun. He points out that the problem is one of emotional unrest, doubt, and fear of injury to a loved one. This unrest has been formed in the minds of many persons because of the widespread publicity given to deaths of two Los Angeles elementary school children who fell from different heights and under different circumstances on school playgrounds within a two-year period.

Educators and recreation departments have been searching for years to find the best surfacing to use on playgrounds and under outdoor apparatus. Irrespective of cost, there still has not been developed a material to be used under apparatus and on playgrounds that will eliminate all injuries to the head, neck, arms, legs, and so on, due to falls.

Dr. R. B. Raney, a Los Angeles brain surgeon who appeared before a thirty-member Citizens' Committee on Playground Surfacing in Los Angeles during July 1952, told the group: "It is not entirely the material on which you fall; it is in part how you land that causes the serious injuries."

Mr. Zaun states that there is no more statistical basis for the use of sawdust, tanbark, or sand than there is for blacktop under apparatus.

In Los Angeles the school district has gone into past schoolground accident records for a twenty-one-year period to see if it is possible to use statistics, based upon experience, to arrive at a sensible conclusion regarding the hazards of various types of surfacing materials.

This study indicates that the type of surfacing had very little, if anything, to do with the severity and frequency of accidents.

During a five-year period there were 1.25 accidents per school of 560 pupils per school year of 180 days in which an elementary school child broke a bone or received a concussion in Los Angeles.

Los Angeles has a record of 2.85 broken bones and concussion accidents per 1,000 students per school year in 1950-51 compared with 2.94 per 1,000 students reported in a questionnaire study to which thirty-three cities with an enrollment of over 10,000 elementary school pupils responded.

In Los Angeles during the past twenty-one years, a period representing more than 770,000,000 pupil-days of exposure, there were four deaths in which playground surfacing played a part. In two of these cases the surfacing was natural earth and in the other two it was blacktop. During the same period more than 200 children of elementary school age met violent deaths as a result of accidents in their own homes. Many of these deaths were the results of falls.

One city has surfaced the play area with a rubber compound embedded in an asphalt emulsion. The actual cushioning effect of this surface, in case of a fall, is very negligible, according to physicians and engineers.

Dr. R. B. Raney, the brain specialist quoted by Mr. Zaun, states that he does believe a fall on blacktop is almost certain to result in more serious injury than a similar fall on more resilient material. He favors the development of a softer, more resilient surfacing material as a vital safety measure for playground activities.

274 *Apparatus Accidents in Yakima Schools*

Howard Schaub reports that in three years of experience covering an average annual enrollment of 4,500 elementary pupils from kindergarten through grade six, there were thirty-seven accidents involving children using playground apparatus in Yakima, Washington, schools.

Of these accidents fifteen occurred where the apparatus was installed on blacktop or other hard-surfaced playgrounds and twenty-two occurred where the playground apparatus was installed on dirt-surfaced playgrounds.

Not all of the thirteen elementary schools of the Yakima system have playground equipment, nor do all have hard-surfaced play areas. The Yakima experience shows that if rocks and pebbles are kept off the hard surface near play apparatus, accidents will be reduced. This has been proved at one school where experimentation was done.

Of the fifteen accidents, eleven involved the wave swing, one involved the swing, one involved the climbing gym, and two involved the chinning bars.

275 *School Bus Accidents in Thirty-nine States*

The National Safety Council has stated that the total number of school bus accidents occurring in 1950 as reported by thirty-nine states was 3,325. In these accidents 28 pupils and 10 others were killed, and 1,190 pupils, 11 other school bus passengers, 33 school bus drivers, and 231 others were hurt.

Ten collisions of school buses with railroad trains were reported, with 212 persons injured but no fatalities.

Other types of accidents reported and the number of such accidents are: collision with one or more vehicles, 2,572; other types of collision, 385; non-collision accidents, 200; pupils struck crossing road to board or after alighting from school bus, 158. In this type of accident 15 pupils were killed, 121 were injured, and two others were hurt.

276 *School Bus Accidents in Virginia*

The Virginia superintendent of public instruction revealed in 1952 that 457 accidents involving school buses occurred during 1950-51 in the state of Virginia. In these accidents, 7 children were killed, 28 were injured, and property damage losses amounted to nearly \$60,000. A total of 3,052 school buses were operated during the year.

277

Fifty Killed in School Bus Accidents

Marian Telford, of the National Safety Congress, reports that 39 pupils were killed in school bus accidents in thirty-four states in 1951. Two passengers who were not pupils but who were riding in the school bus were also killed. One driver was killed and 8 others who were in vehicles that collided with school buses also lost their lives.

In addition to the 50 deaths, there were 1,159 injuries to pupils in school buses as well as to 13 nonpupils riding in a school bus and to 288 persons who were riding in vehicles that collided with school buses.

In the thirty-four states that reported school bus accidents to the National Safety Congress, there were 87,533 school vehicles that transported 5,019,135 pupils.

During 1951, 56 percent of all school bus passengers who were killed lost their lives while crossing highways to board or after alighting from a school bus.

Six pupils were killed in five collisions between school buses and railroad trains.

278

First-Aid Kit for School Buses

The National Safety Council, from a compilation of experiences from many sources, suggests that unit first-aid material has proved to be more practical than bulk first-aid supplies for the use of small groups detached from a central location.

Unit first-aid material is recommended because each dressing and treatment is for one-time use only, materials can be maintained in a sanitary condition, there is not deterioration of the materials or dressings during periods of infrequent use, and there is more likely to be a sufficient quantity and wider assortment of bandages.

For the first-aid kit for school buses the Council recommends the following supplies: adhesive bandages, one-eighth ounce of burn compound, ammonia inhalants, antiseptic swabs, packet of eye compresses, four-inch bandage compress, tourniquet, forceps and scissors, forty-inch triangular bandage, gauze pads three inches by three inches, and gauze compress twenty-four inches by seventy-two inches.

279

Compulsory Driver Education in California Schools

An amended law on Driver Education and Training in California was approved by the governor on January 25, 1949. The act was passed as an urgency measure and therefore became effective immediately.

Parts of the amended sections are as follows:

10201. The aims and purposes of automobile driver education shall be to

develop a knowledge of those provisions of the Vehicle Code and other laws of this State relating to the operation of motor vehicles, a proper acceptance of personal responsibility in traffic, and a true appreciation of the causes, seriousness, and consequences of traffic accidents.

10202. The aims and purposes of automobile driver training shall be to develop the knowledge, attitudes, habits, and skills necessary for the safe operation of motor vehicles. The governing board of any district maintaining a secondary school which includes any of the grades nine to twelve, inclusive, may at its discretion establish and maintain automobile driver training for pupils enrolled in the regular full-time day secondary schools of the district.

10204. (a) From and after the effective date of this amendment the governing board of each district maintaining a secondary school shall provide automobile driver education for pupils enrolled in the regular full-time day secondary schools in the district. Such driver education shall be given in one of the grades nine, ten, eleven, or twelve in every such secondary school which terminates with the ninth or tenth grade. Such driver education shall be given all such pupils prior to graduation from the twelfth grade except as otherwise permitted under this section.

Chapter XV

Fire Prevention in Schools

School fires continue to be a major problem in the United States. The National Fire Protection Association has reported that on the average there are about seven school fires a day in the United States. The economic loss from these fires may be very extensive. For example, in 1952, eight school fires caused damage amounting to more than four million dollars. In 1954 ten sixth grade pupils in an elementary school near Buffalo died when trapped in a school fire.

A study of 565 school fires in which it was possible to determine origins showed that electrical hazards, matches and smoking, spontaneous ignition, deliberate fire-setting, and faulty heating equipment were the five leading causes.

The National Safety Council has reported that one of the best surveys of fire hazards on a college campus was one conducted at the Texas Technological College. In this survey were found a multiple number of fire hazards which could probably be found on almost any college campus in the United States if a similar study were made.

It is reported that all improvements of any importance in fire prevention have been principally in the techniques of control and application, rather than through the discovery of new extinguishing media in recent years. It is stated that modern electronic developments in radar, television, and industrial production will insure greater operating safety in the expanding field of automatic fire control.

Suggestions have been made by competent authorities regarding the use of portable fire extinguishers. Recharging, inspection, and replacement are basic to any program of maintaining fire extinguishers in good usable condition. Attention has also been called to the hazards involved in the misuse of carbon tetrachloride fire extinguishers.

The hazard and significance of spontaneous ignition has been commented upon. It is stated that the best preventives for spontaneous ignition are total exclusion of air or good ventilation.

The National Safety Council reports that sparks resulting from accumulations of static electricity are a common source of fires and explosions. Certain suggestions are given for the prevention of static electricity.

In Minneapolis a fire prevention program has been developed which offers the pupils of that city numerous incentives for participating in the reduction of fire hazards. By 1952, 70 schools in this community were participating in the program.

Several Texas communities have engaged in vigorous school and com-

munity efforts to reduce fire hazards. Their efforts have paid good dividends in terms of the elimination of multiple fire hazards and reduction in fire insurance premiums for the communities involved.

280

School Fires in 1952

The National Fire Protection Association reports that during 1952 eight school fires caused damage totaling more than four million dollars.

Detailed information, which was available on seven of the fires, reveals some common characteristics among the buildings that burned. Six of the seven schools were brick and wood-joisted buildings. At least five of the buildings lacked adequate fire division walls. None of the seven schools had any type of automatic fire protection and in five, water supplies for fighting fires were deficient. Five of the fires broke out at night in unoccupied buildings without watchman service.

281

Causes of School Fires

The National Fire Protection Association reports that in seven schools a day throughout the United States there will be a fire. Most of these fires will occur in the public elementary schools.

In a special study of 565 school fires in which it was possible to determine origins, the following ten causes were found to predominate. Percentages have been rounded to the nearest whole number.

Rank	Cause	Number	Percent
1.	Electrical	94	17
2.	Matches and smoking	68	12
3.	Spontaneous ignition	58	10
4.	Incendiary (deliberate fire-setting) .	50	9
5.	Faulty heating equipment.....	47	8
6.	Chimneys and flues	36	6
7.	Flammable liquids and vapors.....	28	5
8.	Open flames and sparks.....	25	4
9.	Rubbish	23	4
10.	Explosions	17	3
11.	Lightning	17	3

282

Ten Pupils Burn to Death

It was reported on March 31, 1954, in the *New York Times* that ten sixth-grade pupils in the Cleveland Hill Elementary School near Buffalo had died in a fire that trapped them in a room of the school's one-story frame annex.

Twenty-two other persons, nineteen of them children, were burned or injured and taken to hospitals. The school had a total enrollment of more than 1,200.

The fire followed a blast that was described variously as an explosion and as "a puff of smoke."

A member of the fire department reported that the fire was caused by a "heat blast." This type of blast resulted from the accumulation of smoke and heat before the fire started. The building had been heated by a coal-burning hot air furnace. In February of 1952 several children in the school had been overcome by coal gas.

283

Fire Hazards on a College Campus

The National Safety Council reports that one of the best surveys of fire hazards on a college campus was conducted at the Texas Technological College at Lubbock.

A committee on fire protection at this college showed such splendid judgment in their analysis of hazards and suggestions for improvement that the Safety Council has given special recognition to the study.

The committee was fortunate to have the closest co-operation from the Lubbock Fire Department in all its inspections.

Texas Technological College is a young school with a larger percentage of modern fire resistant buildings than many other colleges in the country.

The types of fire hazards found in this survey consisted of exits, passageways, and stairways blocked or partially blocked by "Coke" and candy machines, rubbish, paper boxes, mail bags, and other objects; an insufficient number of exit doors or doors with unsatisfactory markings, doors which opened the wrong way or had the exit lights burned out; inaccessible fire fighting equipment, such as a fire hose in a sealed glass container with no tool for breaking the glass; overweight fire fighting equipment for women employees; absence of needed signs such as "no smoking," "danger," and "exit" markings; poor housekeeping practices, which permitted gasoline rags to be left lying around, shavings under a planer and greasy clothing in locker rooms; unsafe storage such as the keeping of oily floor sweepings in paper bags and open paint buckets with brushes in solvent; inadequate lighting; makeshift electric connections with extension cords running through walls, over radiators, on floors, and looped over metal pipe; multiple outlets on one socket; needed repairs such as those involving broken light sockets, frayed extension cords, hardened gas hose, fire hose leaks, and slippery treads on stairs and fire escapes; incorrect waste paper equipment of flammable materials; and other hazards.

Fire Protection

Mathew M. Braidech, director of research of the National Board of Fire Underwriters, reports that all improvements of any importance in fire prevention or extinction have been principally in the techniques of control and application, rather than through the discovery of new extinguishing media.

Cooling and smothering continue as the two basic principles for the suppression of combustion and extinction of flame.

In special instances, various mechanical means have been developed for restriction of fire fuel by quick withdrawal or safe removal of processed liquids and gases from the burning area. Another extremely special technique of literally "blowing out" fires has been employed on a limited basis in combating uncontrollable oil well fires by blasting with explosives.

All extinguishing media in major use today, such as vaporizing liquids or halogenated hydrocarbons (mainly carbon tetrachloride), carbon dioxide, dry powder, and foam, have been in existence and in varying degrees of use for almost fifty years. Carbon tetrachloride was first used in this field about forty years ago. Portable carbon dioxide units first appeared on the market about ten years later and found wide acceptance in the late 1930's. Dry powder and foam also had their beginnings in 1900-1925, although the use of dry chemicals has grown rather rapidly in the last eight years. There has been little change in the foam principle, although the development of various foam formulations has been quite extensive.

Perhaps the most outstanding of the major new developments include the varied and improved application of water. By virtue of its economic abundance, available force, range of projection, and favorable thermal properties, water is regarded as the best general extinguishing medium. It has no equal for controlling large fires.

Because of its versatility, water can be applied in many diverse ways. When provided with suitable facilities in terms of mechanical equipment and suitable layout, it may be possible to control or extinguish any type of fire with water. By conditioning with chemical additives, water may yet approach a perfect extinguishing medium.

The remarkable record of conventional automatic sprinklers is well known in fire protection circles. A new automatic spray sprinkler now provides, with better atomization and distribution pattern, quicker control of fires and greater protection of ceiling areas, with reduced water requirements and less water damage. Fine sprays and water curtains are being utilized to encompass hazardous areas and restrain the lateral spread of vapors and transmission of fire by radiation and convection to adjacent surroundings. The use of fog nozzles on hose lines by fire departments has resulted in greatly increased efficiency over the ordinary solid streams in certain types of fires.

The higher rate of heat transfer and faster cooling provided by dispersed

water fog is currently stimulating a keen interest in an extinguishing technique for interior fires, known as "indirect application of fog."

Another technique finding increased use in manual fire control operations involves the addition of "wetting agents" to water. These additives enhance the penetrating and spreading qualities of water by virtue of the lowered surface tension. This is reported to be quite effective in the wetting and cooling of water-repellent surfaces and in extinguishing deep-seated fires commonly encountered in fibrous materials. Other similar additives have recently been introduced to promote emulsification and a froth formation or foam blanketing with water sprays and immiscible combustible liquids.

A wide variety of instruments are currently available to provide automatic and continuously supervised fire and explosion safeguards for all hazardous situations in differing industrial operations. Some of the systems are arranged with interlocks to effect multiple action, such as shutting down fans and motors, slamming doors and windows to provide prompt isolation and keep fires and smoke from spreading, and actuating alarms and extinguishing devices. It may be anticipated that modern electronic developments in radar, television, and industrial production will ensure greater operating safety in the expanding field of automatic fire control.

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Portable Fire Extinguishers

The National Safety Council calls attention to the fact that portable fire extinguishers can be brought into action in the vital minutes before the fire department can reach a blaze. Prompt use of the portable fire extinguisher can prevent a vast amount of damage by both fire and water.

The effectiveness of an extinguisher depends upon: (1) the use of the right type of extinguisher, (2) correct location of the extinguisher, (3) regular inspection and maintenance of the extinguisher, and (4) training of individuals in the use of extinguishers.

There are seven major types of portable fire extinguishers: (1) soda-acid, (2) vaporizing liquid, (3) carbon dioxide, (4) foam, (5) dry chemical, (6) gas cartridge, and (7) hand pump.

The soda-acid extinguisher is filled with a solution of bicarbonate of soda. A bottle in the top contains sulphuric acid. When the extinguisher is turned upside down, the chemicals mix, forming a gas which propels a stream of water. Most extinguishers of this type have a capacity of two and one-half gallons. They provide a stream of thirty to forty feet of water, lasting about one minute.

Gas cartridge extinguishers look much like the soda-acid type. They operate the same way except that when inverted they must be bumped on the floor. This drives a pin into a cartridge and releases compressed gas which

forces water through the hose. The extinguisher may contain either plain water or water with an antifreeze chemical added.

The foam extinguisher is shaped like the soda-acid type and is operated in the same manner. In the outer part of the extinguisher is a solution of water, bicarbonate of soda, and a foam-making ingredient. The inner chamber contains water and aluminum sulphate.

When the extinguisher is turned upside down the chemicals mix and force out a foaming stream. The extinguisher contains two and one-half gallons of liquid and generates eight times that amount of foam.

The vaporizing liquid extinguisher is one of the most familiar types and is usually of a one-quart size. Carbon tetrachloride is the extinguishing agent. The instrument is operated by pumping the handle. In contact with heat the liquid turns into a heavy vapor which blankets and smothers fires. The range at which this extinguisher should be used is about twenty feet. The stream lasts about forty-five seconds.

The carbon dioxide extinguisher discharges gas through a hornlike nozzle when a hand wheel, squeeze grip, or trigger mechanism is operated. These extinguishers are available in a wide range of sizes and contain from two to 750 pounds of carbon dioxide. The largest units are mounted on wheels. The gas is noncorrosive and leaves no residue. Successful operation of this type of extinguisher requires a close approach to the fire.

Dry chemical extinguishers are operated by the squeezing of a handle or turning of a hand wheel at the top. This punctures a cartridge of carbon dioxide in the neck of the extinguisher. This forces bicarbonate of soda out through the hose. The powder is treated before it is placed in the extinguisher in order to prevent caking. The smaller sizes have a range of ten to twelve feet, whereas the larger extinguishers of this type can discharge a stream thirty-five to forty-five feet.

The hand pump extinguisher is made in two and one-half and five-gallon sizes. Plain water or a nonfreezing solution can be used in the extinguisher. Hand pumping will force a stream of water thirty to forty feet although it is difficult to use while it is being carried.

Care of Fire Extinguishers

The National Safety Council recommended in 1950 the following procedures for maintenance of fire extinguishers:

1. Recharge extinguishers immediately after use and after the interval of time recommended by the manufacturer.
2. Use only recharging supplies and replacement parts obtained from the manufacturer.
3. Follow instructions on the unit closely when recharging.

4. Inspect extinguishers at least once a month to make certain they are filled, are operative, and have not been tampered with.
5. If an extinguisher is damaged by a blow or fall so that there is a possibility that the shell or seam has been damaged, have the extinguisher tested by the manufacturer or his agent.
6. Do not attempt repairs of damaged extinguishers. Return them to the manufacturer.
7. Have men on the premises who are familiar with the inspection and recharging of extinguishers.

287

Carbon Tetrachloride Fire Extinguishers

H. Ben Snyder, industrial hygiene engineer of the Oregon State Board of Health, observed in 1947 that the carbon tetrachloride fire extinguisher is widely used because it is small, compact, economical, and easily operated.

Carbon tetrachloride is in itself a toxic substance. In low concentrations it will affect the liver, kidneys, heart, and adrenal glands, and in still lower concentrations may cause nausea, headache, and loss of appetite, and impair the sense of balance.

The primary danger, however, in the use of this extinguishing agent is the fact that it will react with water vapor and oxygen under high temperatures to form carbon monoxide, phosgene, and occasionally chlorine gases. The chlorine hazard is especially dangerous where electrical fires are concerned. The danger from carbon monoxide and chlorine, except in electrical fires, is not great unless the fire occurs in a small, confined space.

Phosgene gas, however, is a serious menace. This phosgene, it should be noted, is identical with that used in warfare as a poisonous gas. It attacks the mucous membrane of the nose, the mouth, and the lungs. It combines with the water vapor in the respiratory system to form hydrochloric acid, which attacks the lungs in a corrosive manner, producing an abnormal amount of liquid in that vital organ.

Phosgene in its action is frequently insidious, no harmful effects being apparent for periods of as long as several hours after exposure. Its final action can be very disastrous, however, when the exposure has been severe. Death is not uncommon, and even when the victim recovers he may experience considerable respiratory difficulties for an indefinite period.

The precautions which must be taken to reduce the health hazard from the use of this type of extinguisher are relatively simple and easily followed.

When a fire in a small room has been extinguished with carbon tetrachloride, the area should be ventilated at once. If a fire takes on larger proportions, the operator of the extinguisher should cover his face with a wet cloth.

The operator should stand in such a position that the gases will be blown away from him.

The liquid carbon tetrachloride should be applied directly to the base of the fire. Applied in this manner the amount of dangerous gases rising with the smoke will be reduced and the extinguishing agent will be more effective in putting out the fire.

This type of extinguisher should never be used on fires caused by the burning of magnesium or aluminum. A very large percentage of this liquid carbon tetrachloride is broken up into phosgene and chlorine gases when it comes in contact with these burning materials. The danger of exposure becomes acute.

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Spontaneous Ignition

The National Safety Council reports that when the temperature of combustible material is raised to the kindling point and ignition occurs with no outside source of heat, the process is called "spontaneous ignition."

This type of combustion may be divided into two classes: acute cases which occur suddenly and explosively, and chronic cases where heat generates slowly until ignition takes place.

Many substances subject to acute ignition are well known. Examples are dry yellow phosphorus, which ignites on exposure to air, and quicklime, sodium, potassium, and calcium carbide, which heat when exposed to moisture.

Some materials may be stored for long periods, processed, packed, and shipped with no signs of heating. The first warning may be the discovery of smoke.

Before spontaneous ignition can occur there must be moisture, oxygen, material that will burn, and a certain minimum temperature. Presence of impurities in combustible material may affect the danger of heating.

At ordinary temperatures some combustible substances oxidize slowly and under certain conditions reach their ignition point. These include vegetable and animal oils and fats, coal, charcoal, and some finely divided metals.

Rags and waste saturated with linseed oil or paint often cause fires. In such cases there is a large surface of combustible material exposed, without means for generated heat to escape.

The best preventives for spontaneous ignition are total exclusion of air or good ventilation.

Temperatures above 140 degrees Fahrenheit are considered dangerous in coal piles. If temperatures rapidly approach or exceed that figure, it is advisable to remove the pile or rearrange it to provide better circulation of air.

Some agricultural products are susceptible to spontaneous ignition. Saw-

dust, hay, grain, and other plant products, such as jute, hemp, and sisal fibers, may ignite, especially if exposed to heat or to alternate wetting and drying. Circulation of air, removal of external sources of heat, and storage in smaller quantities are desirable precautions.

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Static Electricity

The National Safety Council reports that sparks resulting from accumulations of static electricity are a common source of fires and explosions.

The hazard from static electricity is most severe in cold, dry weather. In warm, humid weather most surfaces have a film of moisture which helps to draw off static charges.

Static electricity results from friction between small particles, or from contact and separation of two unlike substances, one or both of which are non-conductive.

The flow of gasoline or other flammable liquids through a hose or the discharge of dust-laden air through nonconductive passages may produce static charges.

Static electricity is generated on dry belts, particularly on rubber or leather belts, by the contact and separation of belt and pulley.

Finely divided materials falling through the air or blown through pipes may generate static electricity and ignite explosive mixtures of dust and air.

Humidity maintained at or above 60 percent at 70 degrees Fahrenheit helps to prevent accumulation of static charges.

Body static charges may create a hazard in areas that contain highly flammable dusts, gases, and vapors. Shoes with conductive soles or heels help to drain off the charges. The conductive value of such shoes is reduced by foot powders and by wool, silk, or nylon socks. Cotton and rayon socks are safer.

Conductive floors should be installed in hazardous locations in order to drain off static electricity. Ordinary wax and other nonconductive floor finishes reduce the value of such grounding measures.

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Fire Safety in Minneapolis

Marie E. Trauffer reports that a fire prevention program which offers the pupils of the Minneapolis elementary public schools numerous incentives for participation has been credited with being a major factor in a \$50,000 annual reduction in the fire losses of that city.

Pupils earn membership in the Junior Fire Department by studying materials distributed in the school by fire inspectors and making a grade of 75 or more on a fire safety quiz.

Each member of the Junior Fire Department is given a "hazard correction card." This card records a fire hazard which had existed in the pupil's home and which the pupil's parents certify has been destroyed.

Some of the fire hazards which were corrected during 1951 were as follows:

1. Improper burning of trash, 245 corrections.
2. Improper handling of oily rags, 270 corrections.
3. Improper handling of flammable liquids, 170 corrections.
4. Faulty wiring, 1,195 corrections.
5. Combustibles near heaters, 615 corrections.
6. Improper handling of combustible rubbish, 1,134 corrections.

Each pupil who reports the correction of five fire hazards is advanced to the rank of inspector and receives an attractive badge which he may wear at all times.

Throughout the school year the children study fire prevention and work on various projects in this area. About twenty-five schools participated in the program in 1951. In 1952 this number had risen to seventy schools.

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Reduction of Community Fire Hazards

The Honorable Lyndon B. Johnson of the United States Senate calls attention to the accomplishments of various communities in Texas in respect to the reduction of fire hazards.

The National Board of Fire Underwriters has reported that during 1953 more than \$903 million worth of property was damaged or destroyed by fire or smoke. During the year 11,000 persons died in fires.

Communities that have a higher than average percentage of fires must pay higher insurance premiums. In Corsicana, Texas, the merchants and property owners had been paying about \$75,000 a year in extra fire insurance premiums for a period of three years because the community had been listed by insurance companies as a "hot town."

In an effort to secure lower fire insurance premiums and to reduce fire hazards, community leaders decided to have a town inspection to identify and reduce fire hazards and thus reduce its fire insurance rates.

In Corsicana the Texas Insurance Field Men's Association sent 54 of its field men to participate in the reduction of fire hazards. The entire bill of some \$3,500 was paid by this Association. City officials, merchants, civic clubs, radio, and press were organized by this group of experts. During two days of inspection, teams each consisting of two field men and a Boy Scout were assigned to every downtown business block to hand out slips to homeowners asking them to check the fire hazards in their homes.

After the two-day inspection was completed 859 red tags saying "Fix Me"

had been distributed throughout downtown Corsicana, wherever poor wiring, faulty plugs, inadequate extinguishers, rubbish heaps, or other fire hazards were found. Schools participated in the campaign against fire with drills and lectures.

On the basis of experience in other communities the insurance experts calculate that Corsicana homeowners and businessmen will voluntarily correct from 40 to 85 percent of the fire hazards. In case owners do not make the corrections on a voluntary basis the community has the power to enforce the removal of fire hazards.

Wichita Falls has saved more than \$100,000 in insurance bills since it went through a similar experience of reducing fire hazards by a concerted community program.

Chapter XVI

Nutrition in Schools

Florida experience suggests that five criteria may be used in the nutritional appraisal of school children: the health and nutrition history, the physical examination, certain laboratory procedures, diet records, and therapeutic tests.

Of these different methods for judging the nutritional status of school children, the keeping of diet records has been most frequently employed. The eating habits of elementary school pupils in New York, Connecticut, California, Maine, and other states show that a considerable proportion of our school children are being inadequately fed in either the amount or quality of the foods they consume. Similar studies on high school and college students lead to the same conclusion.

A study of school lunch programs in 16 school systems in the state of Washington during 1954 showed that 54 percent of the students in these schools participated in the hot lunch program. It was found in this investigation that there was little integration of the school lunch program with the curriculum or the community.

Various studies on children have been reported regarding the effects of various nutritional practices. In one study of between-meal feedings of 133 nursery school pupils it was found that in a majority of cases fatigue appeared to be relieved and there was a reduction of irritability and tension among pupils being given a 10 o'clock fruit juice as compared to a control group that did not receive such nourishment. A study of the effect of milk drinking between meals on the food intake of 59 children convalescing from rheumatic fever showed that the between-meal servings of milk provided a true supplement to the diet and did not cause a reduction of foods at meal times. On the other hand, a hospital study on adults showed that when between-meal nourishment was provided that there was a greater quantity of food left on the regular meal time trays. It was believed by the investigators that the patients left food on their trays in anticipation of receiving between-meal nourishment. Such studies obviously have significance for schools that provide a midmorning or midafternoon snack.

The sale of carbonated beverages in schools has been condemned.

A five-year study in Florida suggests that when efforts are made to improve the nutritional status of school children and special attention is given to taking care of known deficiencies and supplementary vitamins and minerals are given, the school lunch offers an effective means of raising the nutritional status of school children.

A study sponsored by the Milbank Memorial Fund indicates that food

habits can be improved by the teaching of nutrition. A breakfast campaign in Flushing High School likewise succeeded in improving the eating habits of a proportion of the student body. At least one study has suggested that striking improvements in the mental abilities of children may result from the improvement of nutritional status.

In Louisiana a six-year study of nutritional habits in one community—where nutrition education had been planned, developed, and evaluated in terms of definite aims by teachers, pupils, parents, and others—showed that eating habits were greatly superior to those of the people in another community that had not been subjected to a nutrition education program.

On June 4, 1946, the National School Lunch Act was established on a permanent basis. The appropriation for the fiscal year of 1946-47 was 75 million dollars. Administered by the United States Department of Agriculture, the program funds were granted to states on a basis of the number of children between five and seventeen years of age, and income per person in each state as compared to the national average. The funds granted to each state were disbursed by the State Department of Education unless the laws in that state prohibited the Department from doing so.

Approximately 6 to 57 percent of the children in the various states participated in the school lunch program during 1947-48. Nebraska had the lowest participation and Massachusetts the highest. By 1953 the Federal government was appropriating annually about \$83,500,000 for the School Lunch Act. For every Federal dollar appropriated, however, states had to appropriate \$1.50 to pay for costs of administration. It was estimated that about 10 million school children were participating in the school lunch program by 1953.

It was announced on February 1, 1955, that Chicago high schools had started a new program in their school cafeterias to serve breakfast before classes. Chicago is believed to be one of the first cities in the United States to offer breakfast at school. As an educational experience, however, the preparation of breakfast in the classroom by elementary school pupils has been previously reported.

The problem of kitchen sanitation in schools has received attention by public health and other authorities. Specific guidance to schools has been offered by various public health departments on this matter.

The concept of the school lunchroom as another classroom where learning situations for pupils can be arranged is basic to the development of an integrated program of nutrition education, according to the thinking of some persons. Suggestions have been made for learning experiences in health and nutrition that may center in the school lunchroom.

Walter Wilkins, M.D., of Jacksonville, Florida, said in 1950 that a nutritional appraisal of school children should be based on the following factors:

1. *History.*—The health history should be as complete as possible and may contain information concerning nutrition.

2. *Physical examination.*—The physical examination should include a brief search for signs that suggest malnutrition: for example, an appearance of chronic fatigue, bad posture, pallor, rough skin, spongy and/or bleeding gums, red tongue, crusty eyelids, sensitivity to light, and sores at the angles of the mouth.

3. *Laboratory procedures.*—Although at present few health departments are equipped to carry out elaborate laboratory procedures for the evaluation of nutrition, the hemoglobin, or blood test for iron, is practical for use on school children. A team of three or four persons can make from 300 to 400 such tests at a school during the school day. Such studies made in Florida indicate that anemia is particularly common in that state.

4. *Diet records.*—Diet records can be of great value in nutritional appraisal of groups. Pupils may keep records of all foods eaten for one, two, or three days, or a week. Many people think this is an excellent educational experience as well as a helpful fact-finding device.

5. *Therapeutic tests.*—Since a number of nutrients are now available in pure form, or as concentrates, curative tests may be of practical significance. If it is suspected that a certain deficiency exists, a corrective nutrient may be given and changes in the health status of the child looked for.

293

Eating Habits of Fourth Grade Pupils in New York

Information on a third phase of a state-wide nutrition survey, to determine what New Yorkers eat, was made public in 1948 by Dr. Herman E. Hilleboe, state health commissioner and chairman of the State Food Commission.

This phase covered a sample group of school pupils in the fourth grade in New York City, Albany, Syracuse, Utica, and a representative group of schools from smaller cities and rural areas. The study was conducted over a three-day period. A total of 4,881 children—2,527 boys and 2,354 girls—participated in the study.

The survey indicated that 70 percent of all the children received 60 or more grams of protein for a daily average. For the purpose of this study, 60 grams of protein was considered sufficient to meet the protein requirement.

Sixty-eight percent of the food records listed an average of three or more glasses of milk daily. On the days of the survey, New York City fourth-graders drank more milk than those upstate. The amount of milk consumed increased with the income in New York City. Throughout the state only 2 percent received less than one cup of milk per day.

Throughout the state 60 percent of the children had meat at least once each day. Only 3 percent said they had no meat. The survey disclosed that

the middle economic group ate less meat in New York City than the lowest economic level.

Sixty-seven percent of all the children had one or more eggs during the three-day period. Forty-eight percent of the children used one or more servings of a green or yellow vegetable daily. The intake on this basis ranged from 44 percent in the upstate areas to 55 percent in New York City. Only 16 percent of those studied ate no citrus fruits and vegetable sources of vitamin C during the three-day period. Half of the group met this standard each day.

The complete survey, the first such state-wide study ever carried out, was conducted under the sponsorship of the New York State Food Commission, appointed by Governor Dewey.

294 *Eating Habits of Elementary School Children*

Martha Potgieter and Viola Everitt gave an account in 1950 of a study of the eating habits of 385 children made by the Red Cross nutrition committee in five elementary schools in Willimantic, Connecticut, in grades four through eight. The children's diets were evaluated by comparison with the Basic Seven food guide.

Each child kept a daily record for seven consecutive days of all the foods he consumed. The following data obtained from the school records were also listed for each child: (*a*) days absent because of illness during the current school year, (*b*) height and weight on two recent dates about one year apart, (*c*) physical and dental defects as recorded within the past school year, (*d*) educational achievement as determined by standard tests within the past year, and (*e*) social adjustment as estimated by the teachers and the school nurse.

The study showed all but one of the diets to be medium or poor in nutritional adequacy. The greatest degree of deficiency (in descending order) was found to be in whole-grain or enriched cereal products, green and yellow vegetables, foods rich in vitamin C, and milk.

The school records of the physical, scholastic, and emotional ratings of the children who were getting "poor" diets, as compared with the ratings of those in the "better diet" group, showed the latter to be slightly better in physical status, in dental status, in days absent because of illness, and in educational ratings, and definitely better in social adjustment.

The diet study proved to be a valuable nutrition teaching tool for the children and teachers who participated in the survey.

295 *School Children Without Lunches*

A report submitted by Mrs. Edith Murphy, co-ordinator of cafeterias in the San Francisco city school system, disclosed in 1947 that at least 57 and

probably many more of the 408 students enrolled at one school were undernourished and frequently went without breakfast and lunch.

"Many of the children come to school without breakfast because they are living in hotel rooms and boarding houses without cooking facilities," the report stated; "many take part of their school lunch for their breakfast and this is definitely not sufficient."

Many of the children were going without lunches simply because they did not have 25 cents to buy a lunch, whether it was served in the cafeteria or elsewhere.

One principal declared he was greatly concerned about the number of students who came to school without breakfast and who had just two meals a day—"lunch and perhaps a scanty meal or pick-up dinner at home at night." None of the many children he had questioned, the report said, ever had fruit or eggs for breakfast.

296

Breakfast Habits of Los Angeles School Children

John L. C. Goffin, M.D., of Los Angeles, reports a survey of the breakfast habits of children in the Los Angeles city schools.

Months of painstaking work by a committee preceded the survey. On the committee were physicians, nurses, nutritionists, teachers, health co-ordinators, supervisors, and statistical experts.

The study was made by means of a check sheet, which 4,693 students returned. Pupils from grades four to twelve were included in the study.

It was concluded that 15 percent of the students had good breakfasts, that 51 percent had fair breakfasts, and that 34 percent received poor morning meals.

It was found that 6 percent of the boys and 10 percent of the girls ate no breakfast at all. Three percent of both boys and girls indicated that they did not get up in time to eat breakfast. Two percent of the boys and 4 percent of the girls indicated that they were not hungry enough to eat this meal. One percent of the boys and 2 percent of the girls stated that they did not like breakfast.

Although most of the meals were prepared by mothers, it was found that 32 percent of the boys and 38 percent of the girls prepared their own breakfasts.

The study confirmed the general belief that children in the lower income brackets have poorer nutrition habits than those in better financial circumstances.

The great majority of students took five to twenty minutes for the eating of breakfast. Forty-seven percent of the boys and 46 percent of the girls ate breakfast in ten minutes or less.

Bread and cereal were consumed by 87 percent of the boys and 79 percent of the girls at breakfast. Sixty-six percent of the boys and 64 percent of the

girls drank milk and 62 percent of the boys had eggs or meat for breakfast, whereas only 48 percent of the girls had this type of meal in the morning. Forty-one percent of the boys and girls had butter or margarine, and 42 percent had citrus fruits. Twenty-nine percent of the boys and 24 percent of the girls had some other type of fruit.

297

Food Habits of Maine School Children

Mary M. Clayton, nutritionist of the Maine Agricultural Experiment Station at Orono, reports that a five-year study was begun in 1947 on the eating habits of 780 junior high school students in various towns in Maine.

The study was based on information obtained from four-day and seven-day diet records, blood tests—for hemoglobin, vitamin A, carotene, vitamin C—and physical examinations for nutritional defects.

The physical examinations showed that several types of defects, probably related to nutrition, were quite common in the children. These included overweight; underweight; signs of previous rickets; rough, dry, and goose-pimplly skin; inflammation of the eyelids; redness, cracks, and sores at the angles of the lips; inflamed gums; and dental caries.

The results of the blood tests for carotene and vitamins A and C gave support to the conclusion that some of the physical defects mentioned in the previous paragraph were related to nutrition. The results of the hemoglobin tests showed that many of the diets were probably low in iron and possibly also in protein.

Examination of the food records of the children indicated that many of the diets tended to be low in citrus fruits and juices, raw vegetables, leafy green vegetables, and milk and milk products.

The diets of the junior high school girls tended to be especially low in calories, protein, calcium, iron, and vitamin C. The diets of the boys tended to be especially low in calories, calcium, and vitamin C.

It was found that in general school lunches were apt to supply less than one third of the recommended allowances. Both the school lunches and the breakfasts of the students indicated that there was a deficiency in calories, iron, niacin, and vitamin C.

298

Diet Records of 1,017 High School Students

Wilkins, Blakely, and Brunson gave the results in 1947 of a study of the hemoglobin levels of 1,147 Parker High School students at Greenville, South Carolina, and a one-day diet analysis of 1,017 of these pupils.

Although no profound anemia was discovered, an appreciable number of students had values which bordered on anemia. The mean hemoglobin value was 13.0 grams for boys and 12.0 grams for girls.

A summary of the one-day diet study is given below:

Daily Dietary Habit	Pupils	
	Number	Percent
No breakfast	46	5
No lunch	54	5
No supper	104	10
No milk	295	29
1 glass milk	348	34
2 glasses milk	210	21
3 glasses milk or more	164	16
No egg	350	35
1 egg	399	39
2 eggs or more	268	26
No vegetable	95	9
1 vegetable	173	17
2 vegetables	284	28
3 vegetables or more	465	46
No fruit	505	50
1 fruit	319	31
2 fruits or more.....	193	19
No lean meat	437	43
Lean meat	580	57

299

Diets of High School Students

Dorothy G. Wiehl and Katharine Berry reported in 1945 that diets of 2,270 high school students in a private and public school in New York City were analyzed for amounts of protein, iron, calcium, vitamin A, and ascorbic acid (vitamin C).

Boys in the private school increased their consumption of protein, iron, and calcium as they became older, but did not increase consumption of vitamins A or C. Intake per pound did not vary significantly at different ages except for protein, which decreased significantly per pound with increasing age, although the total amount consumed was greater than in the earlier years.

Boys in the public school had significantly larger amounts of protein at older ages, but not of any other nutrient, and for each of the five nutrients indicated above there was a significant decrease per pound of body weight with increasing age.

For girls, variation in consumption levels according to age for most of these nutrients was not significant, except that girls in the private school had more iron in their diets at older ages, and those in the public school had less iron and calcium with increased years of age.

Jewish boys and girls had significantly larger amounts than Italians of calcium and vitamin C, and boys (but not girls) had larger amounts of protein and iron. Italian diets furnished about 40 percent more vitamin A than the Jewish diets.

300

***Diets of High School Students of Low-Income
Families in New York City***

Dorothy G. Wiehl gave the results in 1942 of an investigation of the nutritional habits and status of a group of 2,000 high school pupils in New York City. Among boys it was found that 78 percent and among girls 70 percent were on a food-consumption level below estimates of their individual energy need.

The children obtained more of their recommended amount of protein than any other nutrient, but 27 percent of the boys aged 13-15 years and 52 percent of the girls aged 16-19 years were getting less than a desirable amount of protein.

Among girls the most prevalent deficiency was that of iron, with 80 percent getting less than they needed. Among boys about 50 percent had less than their needs.

Deficiencies in vitamins were somewhat less frequent among girls than among boys, but insufficient amounts of calcium, iron, and protein were more frequent among younger girls than among boys.

On a basis of intake of less than two-thirds of the allowance, vitamin A was the most common deficiency for all groups, and formed with deficiency of calcium and of ascorbic acid the three highest deficiencies for all groups.

Medical examinations confirmed the dietary deficiencies with symptoms of nutritional disorders in the case of vitamin A, riboflavin, and ascorbic acid, but only 2.5 percent of the boys and 4.3 percent of the girls showed a medical deficiency of iron.

301

Food Habits of College Freshmen

Young and Storvick, of Oregon State College, reported a study in 1949 of the food habits of 595 college freshmen. It was found by means of a dietary history that 80 percent of the group ate their meals in boardinghouses, 18 percent in private homes, 1 percent in two or more places, and 1 percent in restaurants. Only 76 percent of the group ate breakfast daily. Of the students who eliminated breakfast, 43 percent were found to have poor diets.

The average intake of sweets was the equivalent of 2 candy bars weekly, with a range of 0 to 28 bars per week. The average consumption of carbonated beverages was 3 glasses per week, with extremes of 0 to 21 glasses.

In the over-all analysis, only 19 percent of the group had good diets, whereas

64 percent had fair and 17 percent had poor diets. Men, on the average, had better diets than the women.

302***Hot Lunch Programs in Sixteen School Systems***

Charles Coffey of the University of Washington reported in 1954 a study of 16 school systems participating in a hot lunch program in Eastern Washington. Personal observations of school lunch programs in operation and follow-up interviews with school superintendents, cafeteria supervisors, home economics teachers, cooks, students, and members of the community constituted the basis for conclusions, which are partially stated as follows:

1. Slightly more than half (54 percent) of the students participated in the hot lunch program.
2. Approximately 18 percent of the cost of the programs was financed with federal aid, 21 percent from school district funds, and 61 percent from pupil purchases.
3. The total cost for each meal averaged 28 cents, of which one cent went for nonfood supplies and transportation, 9 cents for labor and 18 cents for the cost of food.
4. Despite minimum requirements for the storage of surplus commodities, there was a need for improvement of storage facilities.
5. In general, the schools did little seasonal buying in quantity.
6. There was a marked tendency to allow cooks to operate the program with little professional consultation, although school administrators recognized the need for co-operation in the training of the cooks.
7. With but two exceptions students helped in various parts of the program.
8. There was little integration of the school lunch program with the curriculum or the community.

303***Between-Meal Feeding and Pupil Behavior***

Mary Elizabeth Keister, Ph.D., of the University of Chicago Nursery School, reported a study in 1950 of the effects on emotional behavior of between-meal feeding of 133 nursery school pupils.

The study did not concern itself with the nutritional effects of between-meal feeding. An observational technique was used to detect behavior indicating that a child was fatigued, tense, irritable, or not operating at a satisfactory level of efficiency. A "negative-behavior score" was given each child by computing his instances of each type of discordant behavior in proportion to all the observations available for him during an experimental and control period.

In terms of emotional behavior such as crying and quarreling, the study showed that the giving of pineapple juice around 10:00 A.M. was definitely beneficial and that emotional reactions were reduced. No detrimental effects were observed, but in a majority of cases fatigue appeared to be relieved and there was a reduction in irritability and tension. The evidence indicated that the feedings promoted a feeling of satisfaction and well-being during the hours before lunch.

There was no indication that the few ounces of fruit juice caused a reduction in the amount of food eaten at mealtime. This information was gathered from daily records of the time taken to eat the meal, the amount of food eaten, and the amount of milk consumed.

304

Milk Between Meals

Irving J. Wolman, M.D., of Philadelphia, reported a study in 1946 of the effect of milk drinking between meals on the food intake of 59 children convalescing from rheumatic fever. The study extended over a period of nearly five months.

The children were fed a seven-ounce glass of homogenized or pasteurized milk twice daily, one hour before meals. No effect on appetite, digestion, or consumption of foods at meals was noted. Amounts taken at meals remained approximately the same (in terms of calories, minerals, proteins, and other nutrients) as when no milk was consumed. No evidence was found in this experiment to indicate milk between meals should be discontinued. On the contrary it appeared that between-meal servings of milk provide a true supplement to the diet.

305

Effects of Between-Meal Feeding

Edna Mae Lundgren and James F. Hammarsten, M.D., reported in 1949 a study of the effects of between-meal nourishments, as measured by the food left on trays by patients hospitalized in two medical wards. Although this investigation was conducted on hospital patients the results have significance in respect to between-meal feedings in the schools.

During a control period of one month the patients were given an adequate diet and between-meal nourishments as ordered by ward physicians. Food left on the trays was weighed after each meal and the amount of between-meal nourishment recorded daily.

An adequate diet was also provided for one month, but this time the between-meal nourishments were eliminated except for patients with peptic ulcers and one patient with liver disease.

Results of the study showed that the amount of edible food left on the trays decreased significantly when the quantity of between-meal nourishment

was reduced. The average weight of the food left on the trays during the control period was eighty-one pounds, whereas when between-meal nourishment was reduced the average weight of the food wastes amounted to only sixty-eight pounds.

It was believed by the investigators that the patients left food on their trays in anticipation of receiving between-meal nourishment, when that was available, and that their appetite was inhibited at mealtime by the between-meal feedings.

306

Carbonated Beverages in Schools Condemned

J. A. Salzmänn said in 1951 that studies with animals and human beings to determine the effects of various acid solutions on the teeth have shown that those solutions of the same strength used in cola beverages may cause erosion of tooth structure. In a comparative study of acid erosion over a six-month period, it was found that tomato juice had the least harmful effect, and that 0.055 percent phosphoric acid was most harmful. Phosphoric acid eroded teeth rapidly almost to the gum line.

Investigations have also revealed that when human teeth are suspended in cola beverage, or in its acid equivalent, they gradually lose calcium over a two-week period. The buffer action of human saliva against cola beverages has been found to differ widely in different individuals. In other words, the result of erosion of the teeth after the drinking of cola beverages would be found to be consistently more harmful in some persons than in others.

The Council on Foods and Nutrition of the American Medical Association believes that opportunities to purchase food and drink at nonlunch concessions bear directly on the food habits established in the child. School children generally have a limited sum of money for the purchase of their daily lunch. If a portion of this money is spent on substances of limited nutritional value, the value of a lunch which a child may obtain with the remaining money obviously is reduced. The availability of carbonated beverages on school premises may induce a child to spend lunch money for these and allow him to develop improper dietary habits. This is especially true for the younger child. Expenditure for carbonated beverages yields a nutritional return much inferior to that from a similar sum spent for milk or other staple foodstuff. Furthermore, when given a choice between carbonated beverages and milk to accompany a meal, a child may frequently choose the less nutritious beverage. In view of these facts, the council believes that carbonated beverages should not be sold on school premises.

The Council on Dental Health of the Dental Society of the State of New York has also condemned the sale of sweetened beverages in school buildings. The Department of Education of the State of New York has notified boards of education in the state that it frowns upon the practice of selling sweetened,

carbonated beverages to school children. In the same category may be included sweets and highly sweetened cookies and cakes.

307 *Effect of School Lunch on Nutritional Status*

Abbott, Townsend, French, and Ahmann indicated in 1946 the results of a five-year study of the effects of the school lunch on the nutritional status of rural children in Florida.

Medical examinations of 186 children in a small rural school were given at the beginning and end of each school year to measure nutritional changes. Of this number 94 ate regularly in the school lunchroom for four years and 82 did so throughout the entire experimental period of five years.

For the first four years the lunch was planned and prepared under the direct supervision of a trained dietitian. This lunch, planned according to optimal standards, furnished at least the minimal daily allowances of essential food factors. During the fifth year, the purchase of the food and the supervision and management of the lunchroom were carried on locally. The authors continued to plan the menus, furnish the recipes, and to give the physical examinations.

For the first four years of the experiment, hemoglobin values of both sexes and all ages increased during the school year and then decreased during vacation. The increase made through the school year was so large that a net yearly gain in hemoglobin occurred.

During the fifth year, the hemoglobin values of both sexes and at all ages showed a net loss. During the fifth year the diets were apparently somewhat inadequate in vitamins A and C and riboflavin, and definitely so in factors necessary for regeneration of hemoglobin.

It was concluded from the study that when adequately supervised, when planned to take care of known deficiencies, and when special attention and supplementary vitamins and minerals are given as necessary, the school lunch offers an effective means of raising the nutritional status of school children.

308 *Teaching Changes Nutritional Habits*

Jean Downes and Anne Baranovsky, of the Milbank Memorial Fund, indicated in 1945 that an experiment in the teaching of nutrition by public health nurses was carried on in sixty Negro tuberculous families in an area of upper Harlem in 1943. The use of each of five foods or food groups was compared with amounts recommended in the dietary pattern prepared by the Food and Nutrition Board of the National Research Council.

Comparison of the use of various types of foods by the same families at two different periods (before and after teaching) indicated a significant increase in the use of specific foods after teaching.

School Improves Breakfast Habits

Iva B. Bennett and Julian Swartz, of New York, gave the results in 1945 of a survey of breakfast habits of 1,500 Flushing High School students.

Of this group, 17 percent reported that they ate no breakfast whatsoever; 32 percent drank coffee; and 18 percent ate cake. Only 46 percent of the students drank milk for breakfast.

An effort to improve the breakfast habits was made in a planned program that included the showing of nutrition exhibits, the sponsoring of "good breakfast week," the holding of a "better breakfast party," the arrangement of assembly programs featuring speakers on nutrition, the preparation and reproduction by students of radio skits on nutrition, and by other activities.

A second survey five and one-half months later showed that 134 students (7 percent) had begun to eat breakfast since the start of the project and encouraging habit changes had occurred in many others. For example, 58 percent were drinking milk at the end of the project. About 55 percent were consuming eggs for breakfast compared to an original 37 percent.

It seemed apparent that a school nutrition program can alter the nutritional habits of students.

Nutrition Influences Educational Achievements

In the mental abilities of children striking improvements resulting from the administration of thiamine daily over the period of a year were reported by Dr. R. F. Harrell, of Teachers College, Columbia University.

The subject children were 120 residents of the Presbyterian Orphans' Home at Lynchburg, Virginia, who were divided into two groups carefully matched as to size, age, sex, stature, mental ability, and educational achievement.

The dramatic effect of thiamine was borne out at the end of the first year, when some members of the two groups were reversed, the controls receiving the thiamine, and those formerly receiving thiamine being given the placebo. The decline of the first group and the rise of the second was decisive according to Dr. Harrell. Care was taken to restrict all children to the same dietary regime.

The tasks and tests were those recognized and in current use among psychologists, including Monroe's standardized reasoning tests in arithmetic, mixed fundamentals (Thorndike), visual acuity, remembering word-number pairs, memorizing new material, reaction time, code substitution, and reading. No adverse effect of withdrawal of thiamine was noted in intelligence tests, educational achievement, reaction time, and height or weight gains, indicating that these characteristics change more slowly and permanently, and that the

effect of the thiamine taken during the first year may have held over into the second.

311 *Values of Nutrition Education in Louisiana*

Floy Eugenia Whitehead, D.Sc., director of nutrition of the Wheat Flour Institute, reports a comparison of the nutritional habits in two Louisiana communities, one of which had been subjected to a nutrition education program for six years.

In this one community nutrition education had been planned, developed, and evaluated in terms of definite aims by teachers, pupils, parents, and others. This program was in operation in Ascension Parish, whereas in St. Martin no unusual nutrition education program had been conducted.

Five habit surveys over a period of several years revealed that in St. Martin the over-all diet of the school children involved was hardly half as good as that in Ascension. Less money had also been spent on food in Ascension.

312 *National School Lunch Act Approved in 1946*

Margaret M. Morris, of the United States Department of Agriculture, said that when President Truman signed the National School Lunch Act on June 4, 1946, he put his name to a measure of national security planned to safeguard the health of our children and to encourage the use of our farm products.

The school lunch program had been carried out on a temporary basis since 1935, but the National School Lunch Act established the program on a permanent basis.

The appropriation for the fiscal year of 1946-47 was \$75,000,000, of which \$10,000,000 was earmarked for equipment.

The program was to be administered by the United States Department of Agriculture. Funds were to be granted to states on a basis of the number of children between five and seventeen years of age, and income per person in each state as compared to the national average.

The funds granted to each state were to be disbursed by the State Department of Education unless the laws in that state prohibited the department from doing so.

Both public and nonprofit private schools were declared eligible to participate in the program.

The Act stipulated that the money from the federal government should be matched dollar for dollar from state sources until June 30, 1950, after which the state's contribution should be \$1.50 for each \$1.00 from federal sources. After June 30, 1955, the state must provide \$3.00 for each \$1.00 from national sources, according to original provisions of the Act.

In the year preceding the National School Lunch Act, approximately 8,000,000 children benefited from lunches financed by the federal government.

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The National School Lunch Program

The Honorable Jay LeFevre of the House of Representatives called attention in 1949 to the number of schools and children participating in the national school lunch program for 1947-48. Data for the various states are shown in the following table:

State	Percentage of Children Participating	Percentage of Schools Participating
Alabama	29.2	29.5
Arizona	27.0	28.7
Arkansas	29.7	20.6
California	19.0	37.4
Colorado	18.8	13.9
Connecticut	17.5	29.9
Delaware	22.4	23.7
Florida	33.3	31.2
Georgia	32.6	27.7
Idaho	27.0	20.6
Illinois	22.5	19.1
Indiana	20.4	25.8
Iowa	22.8	9.3
Kansas	15.0	9.3
Kentucky	27.7	16.2
Louisiana	28.3	35.4
Maine	18.8	23.0
Maryland	24.8	38.9
Massachusetts	25.8	57.1
Michigan	19.9	14.3
Minnesota	26.1	14.7
Mississippi	26.0	20.8
Missouri	19.8	16.0
Montana	19.3	10.1
Nebraska	16.7	5.7
Nevada	18.6	18.7
New Hampshire	25.4	17.4
New Jersey	17.6	43.9
New Mexico	16.1	21.7
New York	23.1	26.7
North Carolina	27.4	25.7
North Dakota	23.3	13.4
Ohio	16.5	22.5
Oklahoma	22.8	31.8

State	Percentage of Children Participating	Percentage of Schools Participating
Oregon	23.0	27.2
Pennsylvania	12.4	17.9
Rhode Island	16.3	39.6
South Carolina	33.0	34.4
Tennessee	25.4	27.4
Texas	19.8	24.5
Utah	32.7	52.7
Vermont	25.1	28.0
Virginia	23.7	24.1
Washington	24.4	41.8
West Virginia	21.8	27.2
Wisconsin	19.8	16.5
Wyoming	23.1	23.0

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Type A School Lunches in California

James M. Hemphill stated in 1949 that the School Lunch Program offered two major services to California schools: (1) cash reimbursements to schools serving meals that met certain federal standards, and (2) donation of commodities by the United States Department of Agriculture.

At that time in California, schools received five cents reimbursement for each Type A meal served, three cents for each Type B meal served, and two cents for each half-pint bottle of milk served in a midmorning or midafternoon nutritional program or served to pupils who bought a bottle of milk at noon. Reimbursement could not be claimed more than once for the same child each day.

The Type A lunch was a complete meal, hot or cold, which provided one-third to one-half of one day's nutritive requirements and at least the following:

- a) One-half pint whole milk (which met the minimum butterfat and sanitation requirements of state and local laws) as a beverage.
- b) Two ounces of fresh or processed meat, poultry meat, cooked or canned fish, or cheese, or one-half cup cooked dry peas, beans, or soybeans, or four tablespoons of peanut butter, or one egg.
- c) Six ounces ($\frac{3}{4}$ cup) of raw, cooked, or canned vegetables and/or fruit.
- d) One portion of bread, muffins, or other hot bread made of whole-grain cereal or enriched flour.
- e) Two teaspoons of butter or fortified margarine.

Requirements for the Type B meal followed the same general pattern but provide for smaller amounts of protein foods, vegetables and/or fruits, and butter or margarine.

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The School Lunch Program

James K. Sunshine, in discussing a proposed cut in appropriations for the school lunch program, points out that in the ten years of its operation the program has used up agricultural surpluses, has been a source of instruction to children in the values of a properly balanced diet, and has provided a nourishing lunch at a price the families can afford.

Most of the students benefiting from lunch programs are in the elementary schools, where the program is thought to be most important educationally and in relation to health standards.

As the program has been operating, it has called for an appropriation from the federal government of about \$83,500,000 to be distributed among the states and territories according to school population and the level of state income. For every federal dollar appropriated, states must appropriate \$1.50 to pay for costs of administration.

Federal money is used only for food purchase. All other money must be appropriated either by the state or by local school committees.

An estimated 10,000,000 children are currently participating in the school lunch program throughout the nation at a total cost of about \$250,000,000.

In most cities and towns enrolled under the plan, the student pays only 15 to 30 cents for a complete meal, although the price may vary according to local food cost.

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Chicago Schools Serve Breakfast

The Associated Press announced on February 1, 1955, that Chicago high schools had, in their school cafeterias, started a new program consisting of breakfast before classes.

Frank O. Warsham, director of school lunchrooms, said the cafeterias will open 45 minutes before classes begin.

A breakfast of bacon, eggs, milk, and toast, Warsham said, will cost a little more than 30 cents. He indicated that the lunchrooms are equipped to serve approximately 90,000 breakfasts a day.

Chicago is believed to be one of the first cities in the country to offer breakfast at school.

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Breakfast in the Classroom

Orrea F. Pye, Mildred H. Kearns, and Sarah Grant Allen gave an account in 1943 of an experiment that called for the preparation of breakfast in the classroom by elementary school pupils.

Approximately 15 to 20 children with health needs, selected by the laboratory nurse from one grade of the Greensboro elementary schools were involved in the learning experience.

Very simple equipment sufficed for the experiment. A small hot plate, a double boiler, and a long-handled spoon were the pieces of essential cooking equipment. Bowls, spoons, and glasses were used for serving the breakfast. In an ordinary classroom situation, each child might bring an old spoon and cup from home or, if money were available for the purpose, paper spoons and cups could be utilized.

Breakfast consisted of a fruit or fruit juice, a hot whole-grain cereal, and milk. Sometimes the children also had bread with molasses. Sometimes raisins or prunes were added to the cereal. This breakfast, though unpretentious, furnished an appreciable proportion of the day's body-building needs of the children.

Duties were allocated to the children weekly in turn. Two children, appointed as cooks for the week, took charge of the actual cooking of the cereal under the teacher's supervision. Many of the children took their "chef" duties with a praiseworthy seriousness and came early to put the water on to boil so that the cereal would be cooked when the others arrived. Other tasks assigned included "setting the table" or getting out the milk or fruit. Almost without exception the children ate their breakfast with enthusiasm. No child was urged to eat, but it was suggested that he taste each food. If he said that he disliked a food at first, it was not long before he was following the example of the other children and cleaning up his bowl. Most of the children came back for second servings of cereal each morning.

The breakfast preparation presented many opportunities for education in life situations. The children learned the importance of washing their hands before touching food or eating. As the children ate together in the classroom, there was opportunity for discussion of table manners. Counting out the number of spoons or bowls or servings of food gave opportunity for number work to the younger children.

The children were weighed each week, and for each a growth chart was kept. The eating of a good breakfast was linked by the teacher to observed gains in weight after a week or more.

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Kitchen Sanitation in Schools

The California State Department of Public Health indicated in 1945 that inquiries had been made concerning proper methods of washing dishes in schools without mechanical equipment. The Department made the following recommendations on this matter. These are minimum standards. Additional safeguards may be required by local health departments.

1. How to Wash Dishes

A two-compartment sink, a sink and a dishpan, or two large dishpans are needed.

Scrape the dishes and utensils carefully to remove particles of food. It is desirable to rinse dishes before washing.

Washes dishes thoroughly in *hot* water with enough soap or detergent to make good suds so as to remove all grease and food particles. Water should be as hot as the hands can stand (110° – 120° F.). Change water frequently to keep it clean and always hot.

2. *How to Sanitize Washed Dishes*

Simple washing and rinsing of dishes is not sufficient to guard against the spread of disease when dishes are used in group feeding. For this reason, the dishes, utensils, and food containers used in the school should be sanitized. This can be done by one of the following methods.

Method I.—Place washed dishes and silver in a wire or wooden rack and immerse them for at least two minutes in clean hot water, at or near the boiling point (170° or higher).

Method II.—First rinse the washed dishes and utensils with soap. Immerse for two minutes or longer in lukewarm or cool water to which chlorine has been added. As more dishes are immersed, more chlorine should be added. The use of racks for lowering the dishes into the solution will be found convenient. One tablespoon of a 3 percent solution of chlorine to one gallon of water will give a solution of the desired strength.

3. *How to Dry Dishes*

The best method is to leave the dishes and utensils in the racks, and drain and dry in the air. Cover with a clean cloth. Drying of dishes and utensils with towels is not recommended.

4. *How to Store Dishes*

When dishes and utensils have dried they should be put away in a clean, dry, closed cupboard. Glasses, bowls, and cups should be inverted. Silverware should be placed in a covered box or drawer. Care should be taken to handle the clean dishes and utensils as little as possible.

5. *How to Dispose of Garbage*

Arrange for removal of garbage at least twice a week, or dispose of it by burying it immediately and covering it with at least six inches of packed earth; or burn it in an incinerator. Until removal, garbage should be kept in a metal container closed with a tight lid. These containers must be cleaned thoroughly after each emptying.

6. *How to Dispose of Dishwater*

Schools which have a connection with a city sewer system or with a septic tank or cesspool should flush the dishwater into that system. Schools having

no connection with a water-flushed drainage system should make provision for sanitary underground disposal of dishwater.

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Twenty-five Ideas for Nutrition Education

The concept that the lunchroom is another classroom where learning situations for pupils can be arranged is basic to the development of an integrated program of nutrition education.

In those schools where the lunchroom is seen only as a public restaurant on schoolgrounds, separate from educational activities, there is little hope of achieving much in the way of educating pupils through the lunchroom facilities or programs, nor is it to be expected that classroom teachers will seek assistance from the lunchroom directors in arranging learning situations in the classroom.

While every effort should be made to encourage the contribution of ideas from others, such as pupils, teachers, supervisors, or parents, it is well for the director of the school lunchroom to initiate a program of education in the field of nutrition with suggestions of her own.

The following list of twenty-five ideas for learning experiences in health and nutrition may be helpful in this respect.

1. Pupil participation in the planning of the menu for a single meal, under the direction of the classroom teacher and the lunchroom director.

2. Puppet-show dramatization of problems associated with eating habits of the children; planning and producing of the show by pupils, teacher, and lunchroom personnel working together.

3. Lunchroom operation of a question box or suggestion box, for getting pupil ideas about improvements in the school lunchroom.

4. Establishment of an orientation program for acquainting pupils with the purpose and use of the school lunchroom.

5. Encouragement of participation by various racial groups in the preparation of "International Day" menus as one aspect of social science study of international groups.

6. Provision of a special table for athletes as part of a training program, with emphasis upon the significance of nutritional habits in sports.

7. Participation by mathematics classes in the calculations of costs, inventory, and other financial aspects of the school lunchroom.

8. Co-operation with art classes or with individual pupils with artistic abilities in the preparation of food posters, murals, place mats, napkins, and so on.

9. Assistance by the lunchroom manager to pupils preparing articles for the school newspaper on food and nutrition and the function of the school lunchroom.

10. The provision of midmorning snacks of a wholesome nature as a service to pupil groups; educational emphasis upon good foods.
11. Establishment of a professional reading shelf in the lunchroom for teachers and pupils interested in learning more about nutrition.
12. Erection of a bulletin board in the school lunchroom with constant shifting of materials for educational purposes.
13. Use of the school lunchroom as a laboratory for experimental study in foods and nutrition by science classes.
14. Establishment of an advisory committee of faculty members to work with the school lunchroom personnel toward making the school lunch a learning experience for the pupils.
15. Provision of instruction in the setting of the table and in table manners by means of films, assemblies, demonstrations, discussions, and so on.
16. Provision of cards with brief factual information about foods instead of mere indications of prices.
17. Arrangement of pupil tours through the kitchen with emphasis upon good sanitation and its significance in food preparation.
18. Use of pupils as host and hostess at family service tables in the lunchroom, with instruction of pupils in proper conduct.
19. Announcements of special foods or dishes, with something of their value, over the public address system from time to time.
20. Provision of information on foods and nutrition for pupils in public speaking classes who wish to speak on such subjects as restaurant sanitation, history of certain foods, and so on.
21. Arrangement of a nutrition course in the school lunchroom by means of a brief daily self-test, in which a quarter-sheet of paper with a nutrition question is given to each pupil. The answer to the question is to be given on the opposite side of the paper.
22. Obtaining gifted speakers for student assemblies from time to time. The topic should be one of current interest in the field of foods and nutrition.
23. Distribution of free materials on nutrition to pupils, teachers, and parents.
24. Co-operation with garden clubs and classes in agriculture in the growing of foods.
25. Arrangement of model food displays for classroom discussion and analysis as a learning experience in nutrition.

320***Recommendations on School Nutrition***

Recommendations of the California State Joint Committee on School Health pertaining to the school nutrition program were approved in 1950 by both the Department of Education and the State Department of Public Health.

The recommendations are intended to assist local school administrators in developing a nutrition program. The primary objective of the program, according to the committee, should be that of providing pupils with a nutritious lunch, while making the lunch program an integral part of the total educational program.

The following observations and recommendations were made by the committee:

1. The school lunch program, as part of the educational program, is the responsibility of the school administration.
2. The school lunch program should be closely correlated with a program of health, nutrition, and social education.
3. Operation should be on a nonprofit basis, with all costs, legally permissible, to be paid from tax funds.
4. Only those beverages which have health and nutritional value should be offered in elementary schools and high schools.
5. Such items as fruits, dried fruits, nuts, plain unsweetened popcorn, and ice cream should be offered instead of candy.
6. Where morning and afternoon service is provided, it should be limited to fruit, milk, and fruit juices and should be scheduled so that it will not impair the pupil's appetite for his regular meals.
7. The dining area should be supervised by certificated personnel during the lunch period.
8. A nutritious lunch, priced as a unit, should be featured.
9. Special dishes provided for teachers should not be at the expense of an adequate lunch for the children, either in terms of a higher charge to children or at a reduction of food values.
10. Whenever possible, there should be a "food handlers" course offered to lunchroom personnel.
11. Students who bring their lunches from home and those who purchase their meals at school should be permitted to eat together.
12. In planning for food service facilities, administrators should give consideration to the educational aspects of the school lunch program.
13. Food sales in the schools by various organizations for fund-raising purposes often conflict with the total health program, and such sales should be discouraged.

Chapter XVII

Athletics and Physical Education

A joint committee of the National Education Association and the American Medical Association has reported on the role of exercise in the maintenance of physical fitness. The latter is only a phase of total fitness and a number of other factors are important in maintaining fitness, according to this committee. Certain suggestions have been made by this group in respect to participation in vigorous physical activities and athletics. In a later report the joint committee concluded that physical education contributes to health because it stimulates normal growth and development of children and youth and increases strength, endurance, and organic vigor.

The Baruch Committee Report of 1945 made various recommendations regarding teaching and research in physical medicine, rehabilitation, health resorts, occupational therapy, and body mechanics. The relationships of these aspects of the report to the field of physical education have been brought out by various competent authorities.

Six desirable objectives of athletics were described by a national leader in the field of health.

The replacement of physical education programs by military training was both advocated and condemned during the past decade. Chief opposition came from the National Education Association and from Mr. Henry L. Stimson, Secretary of War in 1943.

A study of attitudes toward athletic competition in elementary schools reveals that parents are more favorable than teachers or school administrators toward such participation. Approximately 78 percent of 357 parents expressed themselves as being in favor of athletic competition for elementary school pupils. This problem was considered by a number of school administrators and athletic directors of Illinois junior high schools in 1948. Twenty standards to govern athletic participation by elementary school pupils and junior high school students were agreed upon by this group.

Approximately 78 percent of a group of 346 surgeons agreed that where school systems foster a program of interscholastic sports competition for pupils below the tenth grade, such participation should be limited to pupils who are physiologically mature as judged by X-ray pictures of bone development and by other criteria. In general, this group of orthopedic surgeons was opposed to interscholastic competition below the tenth grade because of the rapid growth occurring before this time.

A study of exercise habits of a group of college alumni shows that many college graduates cease all exercises after graduation from college. Very few

of a group of 697 alumni follow the formal exercises which they were taught before 1927.

The American Medical Association recommends that the judgment of the family physician should supersede that of other doctors regarding medical permission for athletic participation in questionable cases.

It is stated that American school children apparently have a much lower degree of muscular fitness than European youngsters in the same age groups and with comparable backgrounds despite the fact that general health and nutrition of the pupils in the United States appears to be infinitely better.

A study (with respect to intelligence and ability to learn muscular skills) of 105 boys and girls in the fifth and sixth grades tends to dispel, in a small way, the notion that superior athletes are apt to be low in intelligence. Just the opposite appears to be the case. A college study involving 246 male freshmen at the State University of Iowa seems to substantiate the conclusion, as it was found in this study, that good physical fitness tends to agree fairly well with achievement in academic studies.

The Wisconsin Interscholastic Athletic Association has reported upon its twenty-three years of experience with an athletic accident benefit plan which currently covers 275,000 pupils in that state.

It has been concluded from a questionnaire study of 415 Illinois schools that health practices in interscholastic athletics can be much improved.

Considerable dissension has arisen in the professional literature regarding whether or not boxing should be encouraged in high schools and colleges. Some authorities have insisted that the risk of brain damage is sufficiently great so that boxing should not be encouraged as an amateur sport. On the other hand, a study of fifty-eight colleges and universities in 1950 showed that 50 percent included boxing in one or more phases of their physical education programs. College athletic directors were about evenly divided as to whether or not boxing should be included in the college program. The need for further studies on this subject is apparent.

Fractures among high school athletes have been described in fourteen cases, of which the diagnosis was not made until X-ray pictures revealed that such an injury had occurred. It is suggested from this study that many fractures sustained in athletics are never diagnosed and that football appears to be the outstanding producer of fractures in high school sports.

The problem of serious recurrent injuries of athletes has been discussed by a college physician on the basis of many years' experience. Certain handicaps or injuries should lead to the restriction of athletic participation in those contests where further injury may be expected.

The problem of "athlete's foot" in sports has been discussed. Various other studies pertaining to health and physical education have been reported in the professional literature.

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The Role of Exercise in Physical Fitness

A joint committee of the National Education Association and the American Medical Association made available in 1943 a report on the role of exercise in the maintenance of physical fitness.

Physical fitness is only a phase of total fitness. Suitable work, adequate nutrition, exercise, rest, relaxation, the use of preventive and therapeutic medical services, and the avoidance of excesses, including alcohol and tobacco, are all important in maintaining fitness.

The contributions of exercise to fitness include the development and maintenance of strength, speed, agility, endurance, and skill, in persons who are physiologically sound. In this connection, games, sports, swimming, rhythmic activities, and prescribed exercises each play distinctive roles.

Individuals vary in capacity to benefit from exercise, because of hereditary limiting factors and differences in body size, strength, and structure. Exercise should be graded according to age, capacity of the individual, and the state of his training and fitness. In general, exercise should be modified in the direction of less strenuous activities after the age of forty. Allowing for individual exceptions, exercise for girls and women should be on a less strenuous level than for boys and men.

The training undergone in preparation for an athletic event contributes more to physical fitness than does the actual event. Since performance in any activity is fundamentally conditioned by the age, sex, and physical capacity of all the participants, it follows that the amount of effort actually exerted by each individual will determine the contribution of the activity to his physical fitness rather than the rules or other specifications of the activity.

The joint committee pointed out that an individual in good physical condition and training may participate in an activity that would be definitely harmful to another person of the same age but not in a comparable state of fitness. The following suggestions were made by the joint committee.

1. All persons should be ascertained by medical examination to be organically sound before performing training routines leading to competitive or other strenuous exercise; such medical examination should be repeated at appropriate intervals or when special needs appear.
2. Hard, fast, sustained, or highly competitive games and sports should not be played by persons beyond the age of thirty-five, unless they have been playing them continuously and have kept themselves fit and accustomed to those sports.
3. Persons who are out of training should not compete in any sport with persons who are in training and accustomed to that sport.
4. Persons should not compete with others of disproportionate size, endurance, or skill where these are significant factors.
5. Persons long out of training should have a period of conditioning

marked by a gradual return to full activity, which may never reach the previous peak.

6. The ability to recuperate after exercise is a good guide for exercise at any age. Recuperation should be reasonably prompt. If breathing and heart rate are still greatly accelerated at the end of ten minutes after exercise, and if there is marked weakness or fatigue persisting after a two-hour rest period, restlessness after retiring for the night with broken sleep or a sense of definite fatigue the day following, the exercise has been too severe or too prolonged for that individual in his present stage of training and physical strength.

7. Unless adequate protection can be provided, activities in which the head is the target are undesirable because the brain injuries that may be sustained outweigh the benefits derived.

322 *Health Implications of the Physical Education Program*

A joint committee of the National Education Association and the American Medical Association, reporting on *Health Problems in Education*, concluded in 1946 that physical education contributes to health because participation in joyous physical activity stimulates normal growth and development of children and youth and increases strength, endurance, and organic vigor. Acquisition of skills usable in leisure-time activities contributes, also, to the development and maintenance of mental health and emotional stability.

Some of the recommendations made by the committee to secure the maximum benefits of physical education activities were as follows:

1. A pupil should be assigned to activities in accordance with the findings of his medical examination.

2. All pupils should be enrolled in physical education classes; those who by reason of illness or disability are unable to participate in the more vigorous forms of activity should be assigned to classes in modified activity, or to rest, with full credit for attendance in either case.

3. A pupil who is absent from school due to severe illness or injury should, before participation in class activities, present a statement from a regularly licensed physician which indicates that he is physically fit to participate in physical education activities.

4. All pupils who have been ill should be observed closely by the teachers for signs contraindicating participation in normal activities.

5. Pupils in the elementary school should have sufficient physical activity (four to six hours daily) to contribute to normal growth and development. Obviously this amount of activity cannot be scheduled within the school day proper. Therefore, a minimum of thirty-minute periods, one in the morning and one in the afternoon, is recommended, one for instruction in physical education activities and one for supervised activity, with an organization of the

school day that will permit an adequate amount of free time for activity and play through the day.

6. The activities should be varied in nature and suitable to the needs, interest, and physical condition of the pupils.

7. Pupils should be classified and grouped according to their abilities and health status.

8. To assist in the development of social adjustment and emotional stability, a number of these activities may be taught and engaged in on a coeducational basis.

9. Students in secondary school should have sufficient physical activity (one to two hours daily) to ensure the maintenance of good health. The daily period of physical education should be of such duration as to allow students to have sufficient time to change to appropriate clothing, to have a minimum of thirty minutes of activity, and to take a shower. This recommendation assumes that the regular period of physical education instruction will be supplemented by an effective extraclass or intramural program involving all students in the school.

10. In the absence of accurate scientific data on the subject, girls should not be required to participate in vigorous activity during the menstrual period.

11. Interschool athletic leagues should be confined to the senior high schools. An extensive program of intramural activities is strongly recommended for both boys and girls in junior high school.

12. Junior high school boys should not compete in American football.

13. To protect the health of competing athletes, each athlete should have a medical examination at the beginning of the training season for each competing sport in which he participates, and should be referred to the school medical adviser whenever he presents signs of abnormal health.

14. A school medical adviser should be present at all football games and should have authority to withdraw a pupil from a game whenever he believes such action is necessary.

15. Interscholastic boxing should not be permitted.

16. Physical education teachers, with the aid of members of the school health staff, should see that injured athletes receive appropriate treatment either from their private physicians or from community clinics.

17. Indemnity insurance to cover the costs of such care should be carried by schools or athletic associations.

323 *The Baruch Committee Report and Physical Education*

F. A. Hellebrandt, of the Medical College of Virginia, observed in 1945 that most of the Baruch Committee Report concerned itself with ways and means of promoting teaching and research in physical medicine. The remainder dealt with the importance of intelligent publicity and with problems

peculiar to four technical subdivisions of physical medicine, that is, rehabilitation, health resorts, occupational therapy, and body mechanics.

Three of these satellite fields are closely allied to certain aspects of physical education. According to Dr. Hellebrandt the teacher of corrective gymnastics has contributed more to the literature on body mechanics than the physician, and has devised most of the objective tests of posture. The preventive educator, specializing in recreational activities, has the opportunity of developing in his patients a limited number of craft skills while offering training in correct body mechanics. He also has extensive training in the organization and administration of diversional programs which differ little from those planned and executed by the occupational therapist.

The need of teachers qualified to carry the heavy burden of preparing physical therapists for the field figured prominently in the report of the Baruch Committee. The physical therapist, with a background in physical education, is uniquely fitted for activity in this area.

The physical education student, certifying for elementary or secondary school employment, receives considerable training in the techniques of teaching. He is taught how to plan lessons progressively and how to test achievement. He knows something about the principles of curriculum construction. Before graduation he goes through a supervised practice-teaching experience. Thus, the physical therapist with a physical education background possesses a store of knowledge and experience which the alert, imaginative, and industrious could apply to the training of students in the field of physical therapy.

In the last analysis, every physical therapist must be a teacher. Remedial exercise forms the backbone of many physical treatment programs. These cannot achieve their optimal results unless they are continued by the patient at home, in the interim between his visits to the clinic. No branch of physical medicine is lacking in home treatment devices. However, these can benefit the patient only if their use is well taught, with due regard to the peculiar need of each individual.

The physical training expert has become a member of a team of three technical associates who assist the physician in the devising of methods whereby the recovery from disabling injuries may be hastened. He has joined hands with the physical therapist and the occupational therapist. The nature and scope of the specific responsibilities to be allocated to each awaits the future. To the specialist in physical medicine there are no barriers between physical therapist and occupational therapist.

William L. Hughes agreed with many other school and medical authorities in 1950 that every participant in vigorous athletic activity should have

adequate medical appraisal before participation, medical supervision during play, and general care of his health at all times. If maximum benefits are to accrue from athletic participation, certain additional safeguards must be provided. These are adequate protective equipment, sufficient physical conditioning, competent professional leadership, and skilled officiating.

Six desirable objectives of athletics were listed by Dr. Hughes as follows:

1. *Athletics should provide physiological results*, indicative of wholesome, functional activity of the organic system. It should be sufficient for the needs of the growing organism. It should develop the individual's muscular efficiency and utility.

2. *Athletics should have meaning* for the participant, should contribute to the development of a play attitude, and should foster interest in the sport outside of classes.

3. *Athletics should provide opportunities for all youths to acquire skills and to experience satisfaction* of performing efficiently in racially old, natural activities. Athletics should also help to develop an appreciation of skillful performance of others.

4. *Athletics should offer opportunity to develop desirable citizenship traits* through harmonious participation and co-operation in group activities, including those involving intercultural relationships.

5. *Athletics should contribute to the relief of emotional strains and tensions.*

6. *Athletic participation should develop an appreciation of, and responsibility for, health and fitness*, life-long interest, and such qualities as sportsmanship and fair play.

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Regarding Compulsory Military Training

The board of directors of the American Association for Health, Physical Education, and Recreation submitted the following statement in 1945 regarding the relationship of this organization to compulsory military training in the United States:

1. The association supports all measures judged by the American people to be necessary for maintaining national security.

2. Compulsory military training, if adopted, should be inaugurated on its own merits and not as a health and physical fitness measure.

3. The health and physical fitness of the people are basic and vital elements in national preparedness for war and peace.

4. An adequate health and physical education program, adapted to individual needs and extending from the formative and critical period of early childhood and adolescence through young adulthood, is basic to any military training. Such a program would ensure fewer rejections in the armed services and would make those accepted more efficient.

5. An individual who has neglected fitness up to eighteen is not going to be fit at nineteen years of age. Even if military training, including physical training, were required for one year for both sexes and all health classifications, including 4-F's, this program would not compensate for all the earlier years of neglect of physical activity.

6. The immediate establishment of adequate civilian health and safety education, physical education, and athletic and recreation programs is an essential element in a comprehensive program for maintaining national security now and in the future.

7. All schools, elementary through college, and agencies affiliated with and comparable to this association have much to contribute toward the development and maintenance of health and physical fitness of children, youth, and adults. Programs of health and safety education, physical education, athletics, and recreation contribute to the development of knowledge, attitudes, habits, and motor skills essential to the health and physical fitness of children and youth. Moreover, these programs provide recreational skills and attitudes that carry over into later life and aid in the maintenance of health and physical fitness of adults.

8. Sufficient funds must be available for professionally trained leadership, adequate equipment and facilities, and essential educational services if schools are to fulfill their responsibilities for the health and physical fitness of all children and youth. The costs of such a program would be small in comparison to the values obtained in terms of individual happiness, social and economic worth, and national security.

9. We are convinced of the need for a comprehensive national health and physical fitness program, which, to be completely effective, must reach all classes of American life.

10. No program of military training, including R.O.T.C., should be substituted for or interfere with a continuous, graded school program of health, physical education, and recreation from the beginning of school through college.

11. We believe the administration of any program of national security should be entrusted to those who are professionally competent. The health and physical fitness program should be conducted by professionally competent personnel in that field. Military training, if adopted, should be conducted by military leaders.

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N.E.A. Opposes Compulsory Peacetime Military Training

The National Education Association favored in 1945 a modern Navy, a large Air Force, and a highly trained Army adequate to meet the defense needs of our country, but believed compulsory military training was not the best method of educating youth for their responsibilities as citizens.

The association opposed the adoption of compulsory military training during peacetime on the grounds that such a law (1) increases the danger of the development of a military political clique, (2) provides a form of discipline and indoctrination which is undemocratic, and (3) interrupts the education of many of our youth, and subjects all of them to the doubtful influences of military camp life at a critical, formative period in their lives.

The viewpoint of the association is that among the best defenses in preparation for any future war should be the development of a sound economy, provision for adequate programs of education and health for all the people, the preparation of large numbers of technically trained citizens, the fostering and expansion of scientific investigation, the elimination of domestic injustices and group conflicts, and the development of national unity.

327 *Should Military Drill Replace Physical Education?*

Mr. Henry L. Stimson, Secretary of War, in 1943 expressed the official attitude of the War Department in respect to military drill versus physical education at that time in the following letter to the U.S. Commissioner of Education.

WAR DEPARTMENT

WASHINGTON

June 16, 1943

*Dr. J. W. Studebaker,
U.S. Commissioner of Education,
Washington, D.C.*

DEAR DR. STUDEBAKER:

I have your letter asking whether the War Department recommends that military drill take the place of physical education in the curriculum of schools and colleges. I assume your question to apply only to the period of the present war and not to periods of peace.

The amount of military drill which can be given in schools and colleges can also be given after induction into the Army, in a relatively short period of time, and under the most productive circumstances. A good physical condition, however, cannot be developed in so short a space of time, and the physical condition of a soldier is of prime importance to the War Department.

The War Department does not want to appear to advise upon the make-up of a curriculum, nor to go beyond outlining some of the elements which the Army believes would be advantageous in its recruits. Of these, a good physical condition is extremely important and a knowledge of basic military drill relatively unimportant.

The War Department therefore does not recommend that military drill take the place of physical education in the schools and colleges during this war period.

Sincerely yours,

HENRY L. STIMSON
Secretary of War

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***Attitudes Toward Athletic Competition
in Elementary Schools***

Phebe Martha Scott, of Bradley University, reports on a study of the attitudes of 357 parents, 508 classroom teachers, and 234 school administrators toward athletic competition among pupils of the fourth to sixth grades inclusive.

The men in the study indicated more favorable attitudes toward intensive competition than did the women. Individuals with experience in competition were more favorable than those with no experience.

No definite geographic differences in the distribution of attitudes were discovered in the cities or states included in this study.

The attitudes of the three groups are shown in the accompanying table.

Population	Number	Percent Favorable	Percent Unfavorable
Parents	357	78	22
Teachers	508	68	32
Administrators	234	55	45

It appears that the program of intensive athletic competition at the elementary school level has the acceptance, if not the wholehearted approval, of most of the parents, teachers, and administrators in the schools included in this study. On the other hand, a minority in all three populations is opposed to athletic competition.

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Athletics in Junior High Schools

Foster Keagle indicated in 1948 that a number of school administrators and athletic directors of Illinois junior high schools, in conjunction with the state's health and physical education department, had drawn up a tentative set of standards for elementary school athletics. Twenty standards were agreed upon:

1. An annual health examination should be demanded of all athletes before participation in practice or competition; and a written statement of approval, signed by the examining physician, should be on file in the principal's office.

2. No pupil should be a member of a school athletic team without written consent of at least one parent.

3. The athletic team should be under the direct supervision of a qualified adult designated by the school administrator.

4. Every school should have a formulated policy regarding the financial responsibility for injury incurred in athletics, and this policy should be known to all participants and their parents.

5. There should be a minimum of three weeks of practice before the first interscholastic game is played.

6. Not more than one game a week should be played. If after-school games are not possible, then early evening games starting no later than 7:30 o'clock and scheduled on nights not preceding school days may be played.

7. The season's schedule should not exceed sixteen games, excluding tournaments.

8. No game should be played which requires staying away from home overnight, or which requires more than a 75-mile round trip.

9. Playing quarters should be six minutes in length and all time-out periods two minutes.

10. A player who has been absent from school and under the care of a physician should bring a written statement from the physician approving his participation in athletics. A player absent from school because of illness, but not under the care of a physician, should secure a written statement from the school nurse or his parent.

11. A boy who is not overweight should not be permitted to lose weight in order to make a lightweight team. No one should be permitted to play on both light and heavyweight teams.

12. An athlete with a head, neck, or spine injury, or suspicion thereof, should be removed from a game or practice, placed at rest, and given a thorough examination by a physician as soon as possible.

13. A participant who is still flushed and perspiring after showering and dressing should be cautioned not to leave the building during cold or inclement weather until his hair is dry and he feels normal.

14. Adequate shower facilities should be provided and participants taught to use them after every practice or game.

15. Weights of players should be checked and recorded on a chart at each practice session. Any abnormal deviation in the weight of a player should be investigated.

16. Practice sessions should be limited to one and a half hours a day, four days a week.

17. Members of the athletic teams should be doing passing work in school.

18. A team may participate in one tournament in addition to the state contest.

19. All athletic contests should be officiated by at least one registered official.

20. There should be an exchange of eligibility lists between schools at least five days prior to a contest.

330***Athletics in Adolescence***

Dr. C. L. Lowman, of the Orthopedic Hospital, Los Angeles, reported in 1947 that the year previous the Society of State Directors for Health and Physical Education passed the following resolution:

Inasmuch as pupils below the tenth grade are in the midst of the period of most rapid growth, with the consequent bodily weaknesses and maladjustments, partial ossification of the bones, mental and emotional stresses, physiological readjustments, and the like, be it, therefore, resolved that the leaders in the field of physical education should do all in their power to discourage interscholastic competition at this age level because of its strenuous nature.

Be it further resolved that where school systems continue to foster a program of interscholastic sports competition for pupils below the tenth grade, that they be urged to limit it to pupils who are physiologically mature as measured by roentgen pictures of the degree of carpal bone ossification, advanced chronological age plus beard growth, or some other indication of physiological maturity.

In November 1946, a questionnaire was sent to 900 orthopedists requesting an opinion on the resolution of the state directors. Of 346 surgeons who replied to the questionnaire 77.7 percent were in agreement with the resolution. Of the fifty who disagreed, thirty-one suggested that certain improvements in athletic programs are indicated, even though they could not agree with the resolution. Roughly 85 percent indicated that competition should be limited to the physiologically mature even though the questionnaire did not specify interscholastic competition.

The overwhelming consensus of opinion stressed the need for better physical examinations by competent physicians, screening first on the basis of a height-weight-age ratio. Some cases should have clinical inspection from an orthopedic standpoint and X-rays should be available to determine bone age and bone condition when the need is indicated. At least 25 percent of those questioned mentioned X-ray as a reliable basis for determining maturity, but its wholesale use would not seem to be practical, according to Dr. Lowman.

331***Exercise After College***

L. Carroll Adams reported in 1948 on a questionnaire study of the exercise habits of 697 alumni of Columbia University.

Forty-three percent of the 697 alumni responding stated that they engaged regularly in physical exercise, on the average of five and three-quarter hours weekly; 90 percent of the group indicated either regular or occasional participation; and 10 percent stated that they did not engage in planned physical exercise at all.

The following information was revealed:

1. Individuals in various vocations and professions revealed marked similarity as to their choices of sports and games. The physical activities in which physicians engage, for example, are the same ones which lawyers, engineers, and teachers prefer.
2. Individual recreational games and sports requiring a small number of participants predominate among the most frequently mentioned activities.
3. Many alumni cease all exercise when they begin to earn a living.
4. Participation by most alumni is seasonal. The time of greatest activity is during the summer months.
5. The more recently graduated classes revealed the greatest variety of interests in physical activities.
6. The percentage of alumni in each graduating class who exercise regularly approximates the average of all the classes studied. This indicates no lessening of desire to exercise with increasing age of the graduates.
7. Despite the fact that formal exercises were taught to all classes graduating through 1927, very few of the alumni followed that type of exercise after leaving college.

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Medical Permission for Athletic Participation

A local physician treated a sixteen-year-old boy for swelling of the hands, face, and legs, elevated blood pressure, and urinary and blood changes following an infected forearm and sore throat.

The physician recommended that the boy should not be permitted to play basketball, a sport in which the young man was a potential star. The coach took the boy to other doctors who examined him after all physical signs of illness had disappeared. They gave permission for the pupil to play basketball.

The first physician appealed to the editor of the *Journal of the American Medical Association* for guidance and received the following suggestions:

. . . Except in extraordinary circumstances *the opinion of the family physician* who treats a high school athlete and is familiar with his medical background *must supersede* that of a physician unacquainted with the details of the illness. . . .

Principal conclusion 16 of the Second National Conference on Physicians and Schools, American Medical Association, 1949, reads as follows: "When problems arise involving medical judgment in which the family physician and school physician are concerned . . . *consultation with . . . specialists to settle the issue* should be used."

. . . Many medical societies have a committee responsible for counseling with school officials on health problems in the school. *If a request (by the coach) for consultation is not granted, he should refer the matter to this medical society committee through proper channels rather than seek a contrary opinion.* . . .

Coaches as well as physicians should approach these cases of doubt and differ-

ences of opinion with extreme care, not only as a means of protecting the players, but to preserve good relations between physicians and schools. . . .

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Muscular Fitness in School Children

It was reported in the *New York Times* on April 24, 1954, that Dr. Hans Kraus, associate professor of clinical physical medicine and rehabilitation at the New York University College of Medicine, had found that American children apparently have a much lower degree of muscular fitness than European youngsters in the same age groups and with comparable backgrounds.

Dr. Kraus told of tests given to American and European children in the last three years to determine muscular strength and flexibility. The examinations were given by the college's Department of Physical Medicine and Rehabilitation to 4,246 normal American school children and 2,870 children from three European countries. "The percentage of children failing these tests," Dr. Kraus said, "is 57.9 percent in our country, compared with 9.5 percent in Austria, 8 percent in Italy, and 8.7 percent in Switzerland. This shows a very low degree of fitness in our children in spite of the fact that their nutrition and general health supervision is infinitely better than any found abroad."

Dr. Kraus said the findings, while true for the groups tested, should not necessarily be considered representative of entire national groups, although they may be indicative.

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Intelligence and Muscular Skill

Louis E. Kulcinski, of the Texas College of Arts and Industries, described in 1945 a study of 105 boys and girls in the fifth and sixth grades in respect to intelligence and ability to learn muscular skills.

The pupils were tested before and after training in a group of exercises and the results were then correlated with intelligence quotients. The group comparisons showed a significant degree of learning muscle skills by the superior groups over the normal and subnormal groups; a marked superiority of the normal groups over the subnormal groups; and a high degree of superiority of the superior groups over the subnormal groups. In other words, it was found in this study that superior intelligence was favorably related to the ability to learn muscular skills. This study should therefore help, in a small way, to dispel the notion that superior athletes are apt to be low in intelligence. Just the opposite appears to be the case.

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Physical Fitness and Success in College

Robert John Weber of the State University of New York reports a study in which 246 male freshmen at the State University of Iowa were compared in respect to their physical fitness and academic averages for the year.

Physical fitness was measured by four activities: the number of sit-ups for two minutes, pull-ups, 100-yard pick-a-back run, and the 300-yard shuttle run. The academic success of each subject was based upon his grades during the freshman year at the State University of Iowa.

A significant relationship between physical fitness scores and grade-point averages for a year was found in the study. The coefficient of correlation was .41, which is at the 1.1 percent level of significance. This finding indicates that good physical fitness as it was measured in this study tends to accompany, fairly well, achievement in academic studies.

No significant relationship was found between physical fitness and personality as measured by the Minnesota Multiphasic Personality Inventory.

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Athletic Accident Benefit Plans

The Wisconsin Interscholastic Athletic Association reports that during twenty-three years of operation of an Athletic Accident Benefit Plan 829,000 students have been covered for various athletic events and that currently 275,000 pupils are covered under this plan in Wisconsin.

One of the principal functions of this organization is to provide an accident benefit plan which is solely operated by the association. The program provides indemnity benefits to assist in meeting the cost of medical, hospital, and dental care in the event of accidental injury to pupils of member schools. The plan also provides a principal sum benefit in the event of death from accidental injury.

The program offers protection for athletes and pupils from kindergarten through the twelfth grade. Benefits are provided only when treatment has been rendered by licensed physicians, surgeons, or dentists.

When an accident is covered by the plan it is the responsibility of the school to report the accident within twelve days. Payment for injuries is not made if they are the result of some factor other than an accident.

Benefits are not provided for cases resulting from congenital weaknesses, from violation of required safeguards, and from disregard of safety measures. No benefits are allowed for hernia, boils, blisters, skin infections, recurrent dislocations, athlete's foot, broken glasses, orthopedic appliances, medicines and bandages, or ambulance service.

However, the pupil benefit plan covers every injury incurred while the student is engaged in a school activity in the classroom, on the playground, in the gym, in the shop, and in the laboratory. The cost of the pupil benefit plan is \$.50 per pupil per year.

The other program is called the athletic benefit plan and is in two parts: (1) coverage for all sports, costing \$2.50 per school year; (2) coverage for all sports except football, costing \$1.25 per school year.

Health Practices Among Athletes

C. O. Jackson, of the University of Illinois, stated in 1944 that from a questionnaire study of 415 Illinois schools the situation with respect to health practices in interscholastic athletics in Illinois was poor at that time. This was especially true in many small schools, and in some large, overcrowded institutions. Specific conclusions concerning a majority of the schools responding were as follows:

1. Medical controls were inadequate, and this tended to hinder or even negate improvements which might be made in other areas.
2. Safe and adequate personal, practice, and game equipment was not provided for all participants.
3. Training and conditioning programs were not adjusted or modified to meet the needs of individual participants.
4. The gymnasium, shower, and locker rooms were not cleaned frequently enough, nor with adequate methods and materials, to eliminate hazards to health.
5. Other aids to cleanliness and health, such as warm water, liquid soap, and paper and individual towels, were not provided often enough.
6. The cleaning of personal and practice equipment was so infrequent and haphazard as to constitute another health hazard.
7. The training of coaches, particularly in health practice as related to athletics, was inadequate.
8. Adequate facilities for instilling or encouraging good health practices in a comprehensive program of athletics and a modern curriculum in physical education were lacking.

Laws on Boxing in High Schools

William F. Duffy, a former intercollegiate and professional boxer, pointed out in 1948 that until 1915 all boxing was banned in most states.

During 1948 twenty-two states made provision in their statutes for boxing in the secondary schools. They were California, Colorado, Connecticut, Georgia, Idaho, Illinois, Kentucky, Michigan, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Pennsylvania, Rhode Island, South Dakota, Texas, Virginia, and Wisconsin.

Although the state law may make provisions for boxing in high schools, it does not necessarily mean that the policy of the state's high school athletic association is in accord.

Interscholastic boxing was prohibited in eleven states at the time of this report. They were Delaware, Florida, Iowa, Massachusetts, Maine, Missouri, Ohio, Oklahoma, Tennessee, Utah, and Wyoming.

Five states determined by common law whether or not boxing was to be permitted in high schools.

The author concluded that while it did not seem feasible to inaugurate any nation-wide legislation forbidding or allowing high school boxing, it did seem advisable to investigate the merits or defects of legislation in geographical sections where high school boxing is flourishing.

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Boxing Condemned in High School

The editor of the *Journal of the American Medical Association*, in response to an inquiry about boxing for high school boys, said in 1948 that a great number of physicians and physical educators have become convinced that boxing cannot be defended as an appropriate sports activity for high school boys.

A. H. Steinhaus ("Statement on Boxing in High Schools," *Journal of Health and Physical Education*, XV [1944], 384) in reviewing the data on this subject asserts that present knowledge appears to warrant acceptance of the following statements:

1. Any serious head injury, even without skull fracture or knockout, may be accompanied by pinpoint hemorrhage or other brain injury.
2. Such injuries may be suffered equally by experienced or inexperienced boxers in their first encounter or after long experience.
3. There are many portions of the brain in which destruction of a small amount of nerve tissue does not cause paralysis or other noticeable changes in behavior. This is especially true in certain subcortical centers and in the cortex where the highest human faculties, such as delicate co-ordination, memory, speech, self-control, and the power of reasoning are lodged. Subsequent injuries add to earlier ones, since each is permanent. The exact location and extent of each injury and the total of all injuries will determine the extent of loss of mental powers or bodily control.

A great deal of the strength and endurance which have been attributed to boxing comes about as a result of the training program in which the boxer takes part. These activities can be a part of the preparation for participation in other sports or of a broad program of physical education. In boxing the primary target is the head, and the goal is to injure or physically punish the opponent with the knockout as the eventuality. This is at variance with sports in which injury is incidental, as for example in football where the touchdown is the goal and injury only a possible by-product.

E. J. Carroll ("Punch Drunk," *The American Journal of the Medical Sciences*, CXCI [1936], 706) after two years' study of boxers to develop a medical understanding of the problem, concluded: "It is probable that no

head blow is taken with impunity and that each knockout causes definite and irreparable damage."

Stating that the incidence of mental injury among those who have stayed in boxing long enough is nearly 50 percent, H. S. Martland ("Punch Drunk," *Journal of the American Medical Association*, XCI [1928], 1103) added that "this seems to be good evidence that some special brain injury due to their occupation exists."

Ernst Jokl, in his book, *The Medical Aspects of Boxing* (Pretoria, South Africa: J. L. Van Schaik, Ltd., 1941), said that there is no evidence to support the frequent allegation that boxing is a particularly valuable method of developing character, determination, and personality.

Kenney, Thacker, and Gebhart ("The Evaluation of Boxing as a College Activity," *Research Quarterly*, XI [1940], 80) polled opinion of health service directors in some sixty colleges and universities. Only 15 percent considered boxing an appropriate high school activity, and slightly more than 50 percent did not favor the sport for intercollegiate competition.

Proponents of "controlled" boxing for high school boys argue that with heavy gloves, adequate protection, and close supervision the activity differs sharply from prize fighting.

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Boxing in Colleges

William E. Harlan, of the University of Florida, observed in 1950 that boxing has become one of the most controversial issues in physical education in the colleges and universities of the United States.

A questionnaire directed to the athletic directors of institutions of higher learning revealed that of fifty-eight colleges and universities that replied to the inquiry, 50 percent included boxing in one or more phases of their physical education program.

Of the colleges that included boxing in their programs, 83 percent placed the activity in their required physical education classes, 48 percent offered the sport as part of intramural activities, and 31 percent provided intercollegiate boxing.

Two general conclusions may be drawn from this study: first, college athletic directors are about evenly divided on the question of whether or not boxing should be included in the college program; and second, boxing is more generally accepted as a part of the required physical education program than as an intramural or intercollegiate activity.

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Boxing in the College Program

Carlton R. Meyers says that a careful evaluation of boxing in institutions of higher learning seems warranted.

In this study boxing was appraised in the light of fifteen criteria for the selection of program content or curriculum in physical education. These criteria encompassed the areas of physical and organic development, social and moral development, psychological development, and development of physical skills. The evaluation was made by a comparison of boxing with other physical education activities.

Boxing was rated in the upper third of the physical education activities studied in respect to physical and organic development, development of desirable psychological qualities, opportunity for self-evaluation, promotion of physical skills, and development of safety skills. On the other hand, boxing was ranked in the lower third of the activities in wholesome competitiveness, development of desirable social and moral qualities, carry-over value, contribution to educational objectives, and administrative aspects.

The following recommendations were made for boxing in colleges:

1. Competitive boxing should probably be conducted only under regulations that are even better than those currently specified by the National Collegiate Athletic Association.
2. Institutions should not offer boxing in any program unless proper, conscientious instruction and supervision, including close medical surveillance, can be provided.
3. Colleges should conduct further studies on the problems of boxing.

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Hazards of Football in Immature Children

Harold E. Crowe, M.D., observed in 1947 that in an institution such as the Los Angeles Orthopaedic Hospital, where crippled children accumulate, there are occasions to see a great many disturbances in the growing portions of the long bones. These consist of inflammation of bone and cartilage in the growing ends of the bones and slipping of the weight-bearing epiphyses, which means a displacement of the ends of long bones carrying weight before the cartilage joining the end and the shaft has become completely ossified. These disorders appear with surprising frequency among fat children.

Perthe's disease and slipping epiphysis in the head of the femur, or thigh bone, are typical results of injury in football and other strenuous competitive sports, and both are likely to lead to permanent disability.

The value of competitive sports and especially sports involving teamwork is undoubtedly of great importance to any boy from the point of view of his social adjustment; consequently the value of such athletic activity cannot be overlooked in the consideration of the training of a youngster for future adjustment to life with other people.

Any child who is found walking with a slight limp that is relatively painless and without a definite explanation should be excluded from all sports

until a definite diagnosis and explanation of his limp has been made. Such a rule could prevent a great many serious athletic injuries.

343 *Unrecognized Fractures in High School Athletes*

W. K. Foster, M.D., and John C. Wells, M.A., of Minneapolis, Minnesota, described fourteen cases in 1949 in which fractures occurred among high school athletes, but in which the diagnosis was not made until X-ray pictures revealed that such an injury had occurred.

Many of these fractures had been concealed by players because of the feeling that they might be accused of being sissies by their coaches or fellow players. It was concluded that every strain in football should be considered as a possible fracture but that a definite diagnosis be made only by X-ray. It was also revealed from this study that many fractures sustained in athletics are never diagnosed. Football appears to be the outstanding producer of fractures in high school sports. Most of the unrecognized broken bones in high school athletes occur in the hands, wrists, forearms, feet, ankles, and lower legs.

The authors concluded that it is the duty of the athletic department in high schools to make a strong effort to keep boys with recent fractures out of competition until the fracture is well healed.

344 *Serious Recurrent Injuries of Athletes*

Augustus Thorndike, M.D., of Boston, reports that after twenty years of responsibility for the control of injuries in organized athletics, he feels that a review of experience in the treatment and prevention of recurrent injuries is needed.

In a well-organized college athletic program, where coaching and medical supervision work hand in hand, there is little likelihood that the athlete will leave college with some disabling permanent scar, "trick knee," or leg paralysis as a result of a sport primarily played for fun. On the other hand, there are graduates who have been seriously injured in sports, some of whom have lost the spleen or one kidney or one eye because of body contact sports.

In the experiences at Harvard University, injuries due to accidents represent over 20 percent of the total diagnoses at the student health service year after year. This percentage includes injuries from explosions, automobiles, and roughhousing, as well as from athletics, and so is not an indication of the extent of sports accidents.

Students with certain serious athletic injuries that have required surgery or those with a large abdominal scar should not be permitted to participate in body contact sports, although they may compete in other selected sports.

Dr. Thorndike also states that body contact sports should not be permitted

for any student athlete who has suffered removal of the spleen or a kidney, or who has suffered three brain concussions of moderate degree or one concussion resulting in the diagnosis of laceration of the brain. The loss of an eye should also lead to a restriction of athletic participation.

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"Athlete's Foot" in High School

A representative of the American Medical Association, in reply to an inquiry as to whether or not copper sulphate should be incorporated in the flooring material of the shower rooms in a new high school gymnasium, responded that there are several schools of thought regarding the mechanism by which fungus infections of the feet occur. According to this authority, there is no evidence that antifungal agents, such as copper sulphate, incorporated in flooring will reduce the incidence of such foot infections.

Regular foot-bathing in pans filled with antifungal solution, when given a controlled trial aboard ships of the United States Navy, did not reduce the incidence of this disease in men using showers.

The most logical means of preventing recurrences of quiescent infections would appear to be simple measures for controlling the accumulation of moisture between the toes and damage of the skin which seem to favor the growth and spread of the fungi.

After each shower or swim, careful, gentle drying of all areas where moisture can accumulate, such as between the toes and buttocks, and liberal use of mild, antifungal powders between the toes would seem to give best results. The correction of conditions leading to excessive heating and perspiration between the toes such as may occur from improper shoes or other conditions may also help.

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High Blood Pressure in High School Boys

In response to a query regarding hypertension in high school boys a representative of the American Medical Association stated that it is unusual to find a number of boys with systolic blood pressures reading over 150 millimeters of mercury.

The finding of a pulse rate of 100 or more per minute among high school boys is also rare.

The normal blood pressure at this age is best described as a range. The normal range for high school age youths is probably 105 to 135 mm. Hg, so far as the systolic pressure is concerned. A normal range for the diastolic pressure is 60 to 85 mm. Hg.

Students with blood pressures persistently higher than these values should be thoroughly examined to rule out possible causes of elevated blood pressure. Boys with blood pressures below 145 mm. Hg, who do not have an enlarge-

ment of the heart or any other demonstrable cause for the blood pressure, can be permitted to take part in competitive athletics provided that there is medical supervision. When pressures exceed 145 mm. Hg, the student should not be permitted to engage in competitive sports. This is because enlargement of the heart and hemorrhage of the brain are more likely to occur with the increased hypertension brought about by the emotional and physical stress of participation in competitive sports when this is added to the already elevated blood pressure. These students should, however, be permitted to participate freely in a supervised program of physical education. No boy with a resting pulse greater than 95 beats per minute should be allowed to participate in competitive sports either.

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The Physical Educator and Infantile Paralysis

C. E. Turner and West J. Altenburg, of the National Foundation for Infantile Paralysis, indicated in 1948 that physical educators in schools and colleges have a unique concern with many aspects of the battle against infantile paralysis.

The physical educator's responsibility for detecting possible polio and for getting the child or youth out of the activity program and under medical attention is important. Symptoms which might indicate the presence of infantile paralysis are fever, drowsiness, headache, stiffness and pain in the neck and back, nausea or vomiting, muscle pain or spasm, restlessness and irritability, diarrhea, constipation, sore throat, and chills. Obviously, not all of these symptoms are present at once. Early diagnosis is often extremely difficult even for the experienced physician.

There is one condition which the physical educator is perhaps in the best position to detect. We refer to the pupil or student who comes back to school with an undetected residual paralysis or weakness in one or more muscle groups. The youngster may have had a mild case which was not recognized. Draft data showed 6 out of every 1,000 men examined had a detectable residual from polio.

More serious cases may come back to school with various degrees of crippling. The specialist in correctives may have the responsibility of adjusting the activity program of these individuals. All teachers, however, and especially teachers of physical education, have a responsibility for assisting with psychological and emotional readjustments. There has been no impairment in the student's mental capacity but crippling may have closed many occupations or activities to him. His return to school follows a severe emotional experience as well as physical suffering. Under wise guidance good psychological adjustment may be expected.

The physical educator needs a clear-cut description of the child's physical limitations, with particular emphasis upon the types of activities that must

be omitted in order to avoid further structural damage. Swimming is a helpful activity in many cases. The breast stroke, for example, provides excellent symmetry of movement.

The physical educator may also be concerned with health education for a better understanding of polio as part of the general program of school health education, participation in the democratic process through which schools and colleges join the rest of the community in fighting this disease, the upgrading of professional services in physical therapy and health education, and support of the broad program of scientific research which will show the way to control, perhaps even to eliminate, the disease.

348***Exercises for Painful Menstruation***

Josephine W. Hubbell, of the University of Virginia, recalled in 1949 a study which was conducted at the State University of Iowa during the year 1947-48 to determine the effects of exercise on painful menstruation. The study was carried on over a period of twenty weeks with a discontinuance of eighteen days during the Christmas holidays. This interruption occurred at the end of the sixth week of the study. The subjects were girls drawn chiefly from the freshman classes of the Liberal Arts College and the School of Nursing who volunteered their services because of their interest in securing relief from painful menstruation by means of exercise.

Exercises for Group I and Group II included the Billig exercise and the more or less traditional type of exercises for painful menstruation, including the Mosher exercise. The subjects in Group III did a series of four exercises designed for general body improvement but carefully selected by the writer for their expediency in avoiding as far as possible the direct use of abdominal muscles, which feature characterized the other exercises. Data were studied on records submitted by fifty-three subjects who performed the prescribed exercises over a period of twenty weeks.

The following conclusions were drawn from the data presented in this study.

Exercise taken with the expectation of reducing the incidence of painful menstruation did have a favorable effect.

It could not be determined from this study whether the relief from painful menstruation obtained by the subjects performing the general exercises was the result of a generally improved condition of physical fitness or the result of a psychic factor because the subject knew that something was being done to remove the condition of painful menstruation.

No group of exercises was superior to the others in inducing a reduction of painful menstruation.

Remedial Physical Education in Seattle

R. K. Cutler related in 1949 that when Roosevelt High School in Seattle, Washington, resumed its remedial physical education program which had been halted in 1942 because of the lack of examining physicians and teaching personnel, of 492 freshman and sophomore boys examined, 81 were recommended for remedial work. Of 457 girls, 78 were found to be in need of special classes. The majority of cases fell into four categories: general posture, muscle tone, feet, and underweight or overweight. No heart cases were discovered among the boys, but 29 girls were classified in this category.

A photograph made through a posture screen is used in connection with counseling the student to show him why he has been placed in a special class. Underweight students have a special period in which they may have milk and a sweet roll.

In operation since the fall of 1947, the program has received favorable public notice.

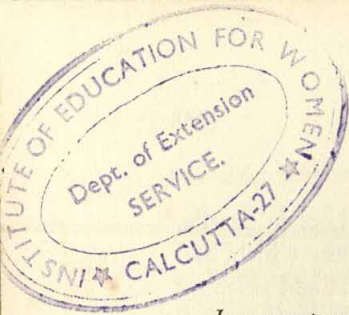
Exercise and Water

C. C. Little, H. Strayhorn, and A. T. Miller, Jr., of the University of North Carolina, gave an account in 1949 of a study to test the validity of the belief that distention of the stomach with large amounts of water decreases the capacity for strenuous exertion.

The experimental subjects were four healthy young men who were thoroughly trained in treadmill running. In each series of experiments, control observations without water alternated with experimental observations in which water was ingested. In all the experiments, water drinking produced sensations of distention and some disinclination for exercise, but there was no discomfort during the exercise.

Swimming and track events were selected for study because the times in these events provided quantitative criteria of performance. The 50- and 200-yard swims and the 220-yard dash were studied on varsity athletes, and an additional study of the 220-yard dash was made on a group of untrained students in a physical education track class. In each series, the event was performed five minutes after drinking one liter of water, with alternate control and experimental observations.

Results of the study showed that drinking of 1.0 to 1.5 liters of water five minutes before exercise had no adverse effect on heart rate and minute volume of ventilation during treadmill running or on performance time in swimming and track events. It is suggested that, except in the case of the occasional athlete who suffers nausea, there is no physiological justification for the rigid restriction of water intake in athletic contests.



Chapter XVIII

Health of the Teacher

In recent years an increased emphasis has been placed upon the mental health of the classroom teacher. It is becoming recognized that the unstable teacher exerts such a detrimental impact upon children that she should not be allowed to remain in contact with them.

In general, teachers are a stable and well-balanced professional group. In one study of 110 teachers with an average experience of five years of teaching, it was found that roughly two-thirds of the group felt that they had improved in personality as a result of their teaching. Overwhelmingly, teachers are not frustrated or unhappy in their profession.

A study of the effect of teacher personality on the behavior of pupils has brought out specific factors that have a favorable relationship upon the mental health of the pupil. A multiplicity of factors appear to be involved in the emotional relationships of teachers with their pupils.

In 1942 it was found that boards of education in 1,795 cities did not require a medical examination for teachers prior to employment in the majority of cases. Only 25 percent of the cities at that time were requiring their teachers to submit to a physical examination. Since that date, however, an increasing number of cities and states have passed requirements on various aspects of teacher health. For example, in California the Attorney General's Office has expressed the opinion that a local board of education can order all teachers to have chest X-ray examinations to make sure they are free from tuberculosis. In the state of New York a decision by the New York State Supreme Court in 1945 made clear the legal right of the Board of Education to require teacher X-rays to prove freedom from active tuberculosis.

In a 1951 study of 430 teachers it was found that 84 percent of the group considered their health to be excellent or good. At that time approximately 40 percent of the teachers indicated that a health examination had not been required as a prerequisite for entrance into the school system in which they were employed.

In Philadelphia an analysis of 10,331 health examinations of employees of the Board of Public Education during a two-year period from 1946 to 1948 showed that approximately 64 percent had defects of one kind or another. Uncorrected disorders of vision, hearing defects, dental decay, heart and circulatory system abnormalities, overweight, underweight, various orthopedic difficulties and skin conditions were found in significant numbers and percentages.

Teachers have been found with active tuberculosis in both the United States and foreign countries. In Denmark one instructor infected seventy

pupils with tuberculosis, thirteen of whom developed active disease. There was one death in this epidemic.

A Los Angeles study of causes of death among teachers and nonteachers has revealed no striking differences between these two groups in terms of mortality.

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Health of the Teacher Is Most Important

Morey R. Fields, Ed.D., director of the Bureau of Public Health Education of the New York City Department of Health, states that the school cannot provide environmental experiences which will contribute to desirable development of the child unless the school is staffed with healthy teachers. The unstable teacher exerts such a detrimental impact on children that she should not be allowed to remain in contact with them.

Effective guidance of children is successful to the degree that it is participated in by teachers with well-adjusted and wholesome personalities. Factors related to human understanding will not respond to laws, sanitary codes, or the drawing boards of the architect. Here, controls are personal, from the mind and the heart.

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Effects of Teaching on Teachers

George W. Hartman, professor of educational psychology, Teachers College, Columbia University, New York, reports a study of 110 teachers with a median experience of five years of teaching in respect to specific personality changes which could be attributed to teaching.

It was found in this study that roughly two thirds of the teachers insisted that they had gained in personality assets.

It was found, for example, that 77 percent of the teachers say that their profession did not make them tense, nervous, or anxious; 95 percent were not jealous or envious of others; 85 percent were not frustrated or unhappy. In general, Professor Hartman concluded that most persons who earn their living by teaching are convinced that whatever personality changes have occurred in themselves as a result of this work are preponderantly beneficial.

In their own eyes the teachers of this group felt that their profession had made them better human beings—a form of psychic income or vocational “compensation” seldom emphasized although probably recognized in comparing this career with others. The teachers were aware, however, of definite “character hazards” which the members of the profession must run and which show a tendency to increase the longer one remains an educator. In this investigation about one teacher in eight who had taught seven years or less found his undesirable traits enlarging.

Professor Hartman comments that it is regrettable that no comparable

information about similar personality modifications in physicians, lawyers, engineers, businessmen, and other occupations exists. Yet what the self becomes is surely as legitimate and civilized a criterion of "success" or "failure" as other more obvious and popular measures. By this neglected yardstick the relative prospects of the beginning teacher seem very favorable indeed.

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***Effect of Teacher Personality on the
Behavior of Pupils***

S. R. Laycock, dean of the College of Education at the University of Saskatchewan reported in 1950 on visits to 157 classrooms and observations of 15 teachers in respect to the effect of the personality of the teacher on the behavior of pupils.

Dean Laycock gained the impression that the effect of many teachers on the mental health of their pupils is definitely bad. In his judgment this seems to be largely the result of public ignorance that the teacher's job is similar to that of a social engineer engaged in promoting the all-round growth and development of pupils rather than that of "filling station hand" whose job is to fill the tank in the child's mind with subject matter.

The personality of the teacher was appraised by Dean Laycock in two ways: first, by using the Laycock Mental Hygiene Rating Scale of Teacher's Personal Effectiveness, and second, by subjective appraisal of the teacher through observation and evaluation of class and teacher activities.

The writer concluded that such teacher characteristics as the following are significant in their effect upon a pupil's mental health: enjoys her job and likes her pupils; creates friendly atmosphere in classroom; is enthusiastic, vital, courteous, poised, secure, and well adjusted; sees things from pupil's point of view; is interested in pupil's interests and activities; treats all answers with respect and fairness; possesses sufficient self-restraint to allow pupils to think through own problems; guides pupils to evaluate own work; is free from racial, religious, or class prejudices; recognizes and provides for individual differences; has satisfying emotional life of own and is not fussy, dithery, fastidious, oversensitive, or gushing; accepts all her pupils (including those who have problems) emotionally; helps pupils to feel they belong to class and are accepted by it; conducts her class as a co-operative group where teachers and pupils together think through topics, solve problems, and pursue activities; provides for a feeling of success for all pupils, whether dull, average, or bright; sees that all pupils get the approval of herself and their peers on worth-while activities, qualities, and behavior; builds self-esteem in pupils by helping them to feel that they are worth-while individuals because of their work, play, qualities, and behavior; regards good "discipline" as good ways of living and working together; approaches behavior difficulties from an objective diagnostic point of view without resentment or irritation; uses observation

of children's play as a means of understanding them; sets out through class and extraclass activities to help pupils strengthen the weak places in their personalities; develops in pupils the problem-solving approach to difficulties not only in schoolwork but on playground and in personal relations; takes steps to see that pupils share with adult citizens in promoting the health, safety, beauty, and general welfare of the community; seeks the co-operation of parents through such means as individual parent-teacher conferences, visits to homes, parents' visits to schools, parent-teacher associations, and wise methods of reporting to parents.

Dean Laycock's study was made at the request of the National Committee for Mental Hygiene in Canada to provide information on Canadian education from a mental hygiene point of view.

354***Health Examinations for Teachers***

The Research Division of the National Education Association reported in 1942 on a study of practices in respect to the selection and appointment of teachers.

It was found that only 25 percent of 1,795 cities reported that applicants for the teaching profession were required to submit to a physical examination. Only 8 percent of the cities required the teaching applicant to have a health examination by the school physician or other physician approved by the board of education, whereas 16 percent of the city school systems would accept a medical examination report from any licensed physician. In one percent of the cities requiring examinations the status of the examiner was not specified.

It is apparent from this study that three-fourths of our city school systems in the United States did not give much attention to the health of the applicant for a teaching position at the time of this investigation.

355***Compulsory X-rays for California Teachers***

In California the Attorney General's Office was asked in 1949 whether a local board of education can order all teachers to have chest X-ray examinations to make sure they are free from tuberculosis, and, particularly, whether holders of life diplomas and certificates can be compelled to submit to X-rays.

The analysis and opinion rendered at that time stated:

In view of the declared purpose of the law in seeking to prevent the spread of tuberculosis and the possibility, if not the certainty, of its communication under conditions obtaining in the schoolroom, it follows that the governing board has the authority to take suitable steps to prevent exposure of others therein by an infected teacher.

Since an X-ray examination of the chest is a suitable and recognized means of diagnosis for pulmonary tuberculosis and a reasonable means of determining the presence or absence of this disease, the requirement of such examinations at reasonable intervals is an appropriate means of guarding against possible infection in the teaching staffs of the schools.

Such requirements may be enforced.

Holders of life diplomas and certificates are not immune from the requirement of such X-ray examinations.

356 *Teachers Lose Court Case Against Required X-rays in New York*

The American Public Health Association called attention in 1945 to the fact that a decision of the New York State Supreme Court had been announced in the case brought against the New York City Board of Education and the New York City Department of Health by a Joint Committee of Teachers Organizations in New York City. This decision denied the teacher committee's request for an injunction to restrain the Board of Education and the Health Department from enforcing the regulation to require teachers to have a chest X-ray every two years.

Regulations of the Sanitary Code adopted by the Board of Health of the City of New York requires teachers and other employees who work in the schools and come in contact with the children to procure biennially a certificate from a physician or from the Board of Health based upon a chest X-ray examination, and certifying that such employee is free from active tuberculosis.

The teachers contended that the Board of Health was not empowered to enact such a regulation, that the regulation, in addition to being beyond the scope of the board's powers, was arbitrary, capricious, unreasonable, and contrary to the constitution and laws of the United States and of the state of New York. It was contended that the regulation denied equal protection of the law to the persons directed to submit to such examination, and that it was discriminatory in that it was applicable to no other person or group of persons who come in contact with children, or indeed to those whose work places them in frequent contact with persons who may be infected with the disease. These claims were denied by the Board of Health.

The New York State Supreme Court concluded that the legislature had properly delegated the power to regulate the public health to the Department of Health of the City of New York within certain limitations.

There is no question but that the regulation in question is necessary for the protection of the public health of the people of the City of New York. Respondents' affidavits disclose that the contacts between the teacher and the school child, often intimate, greatly increase the hazard of infection if the teacher should be

an open case of pulmonary tuberculosis. Respondents' affidavits also disclose that tuberculosis is not a disease that is readily apparent to the eye, nor is it easily recognizable on the basis of symptoms. It may exist for a long time without any outward manifestation in the victim. Under the circumstances the regulation is not arbitrary or capricious but rather a reasonable exercise of the power vested in the Board of Health to protect the public health.

Petitioner's further argument that the regulation is discriminatory and unconstitutional in that it applies only to schoolteachers and school employees is also untenable. There is no constitutional prohibition against class legislation as such if the classification is based upon some reasonable ground and it is not essentially arbitrary.

. . . There remains for consideration the question whether or not this regulation invades the petitioner's constitutional rights and privileges. Where, as here, the choice must be made between the individual rights of the teacher on the one hand, and health of school children generally, on the other, I am of the opinion that the teacher's rights must yield to the common good. In this connection our courts have consistently held that the natural right to life, liberty, and the pursuit of happiness is not an absolute one but that it must yield if the sacrifice is necessary in order that organized society as a whole is to be benefited.

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Health Problems of Teachers

Fred George Rhodes, Ed.D., of Los Angeles State College, reported in 1951 a study of the health problems of 430 classroom teachers in attendance at Stanford University and San Jose State College.

Approximately 84 percent of the teachers considered that their health was either excellent or good, whereas approximately 16 percent thought their health was either poor or fair.

The 430 teachers reported a total of 2,121 health disorders. Among the leading ailments were colds, sore throats, and other respiratory diseases, disorders associated with nervousness, digestive disturbances, eye difficulties, menstrual disorders, and skin maladies.

A total of 232 illnesses were experienced by the teachers, which were serious enough to require a doctor's care during the five years preceding the study. In this part of the study it was shown that more teachers suffered from anemia than from any other single factor. There was also a high prevalence of allergies and skin disorders.

Forty-five percent of the female teachers and 37 percent of the male teachers indicated that nervousness was sufficiently intense so as to be a disturbing factor to their health. Thirty-two percent of the teachers stated that they had persistent worries which were sufficient in intensity to cause interference with their efficiency as teachers. Nevertheless, three out of every four teachers indicated that they definitely enjoyed the work of teaching.

Approximately 40 percent of the teachers indicated that a health examina-

tion was not required as a prerequisite for entrance into the school system in which they were employed.

According to this study, only 15 percent of the teachers considered themselves to have such ill health or lowered vitality that it did not enable them to meet successfully the continuous stresses of the classroom.

358***Health of School Employees in Philadelphia***

Rudolph Bloom, M.D., of Philadelphia, said in 1949 that the School Health Act passed by the General Assembly of the Commonwealth of Pennsylvania in June 1945 requires that at least once every two years teachers and all other employees be given a complete medical examination by qualified and approved examiners. The employee may elect to have the examination made by a school physician without expense to the individual, or by a private physician without expense to the board. Examinations are made with use of an official medical record form approved by the Pennsylvania Department of Health for the purpose.

This study consisted of an analysis of 10,331 health examinations made of employees of the Philadelphia Board of Public Education during the two-year period from September 1, 1946, to June 30, 1948. Taking the employees as a whole, it was found that 63.5 percent were recorded as having defects. It is interesting to note that 7.2 percent were considered to have defects of such character and/or degree as to warrant recommendation for re-examination before the end of the regular two-year interval.

Uncorrected defects in vision, hearing defects, dental defects, heart and circulatory system abnormalities, overweight, underweight, various orthopedic defects, and skin conditions were found in significant numbers and percentages.

359***Epidemic of Tuberculosis Traced to Teacher***

T. V. Hyge, of Denmark, reported in 1947 that an epidemic of tuberculosis which occurred in a state school for young girls was caused by a female teacher in whom an active case of tuberculosis had not been demonstrated before the outbreak.

The instructor infected seventy pupils with tuberculosis, thirteen of whom developed active disease, with one death.

The infection was transmitted in a small room in the basement of the school. The room was lacking in ventilation and sunlight, and other small classrooms in the basement were also involved in the spread of the infection.

Active tuberculosis in the teacher was revealed only by special X-ray technique and the centrifuging, staining, and examining of washings from the stomach for tubercle bacilli.

Causes of Teacher Mortality

Arthur Gould, deputy superintendent of schools in Los Angeles, California, reported in 1941 that it is pertinent to inquire into the causes of the death of teachers in order to compare the causes of their deaths with those of the nonteachers. The purpose of such comparison was to endeavor to find out whether there are any physical disabilities that seem peculiar to teachers as a class. In this study a comparison was made between a group of two hundred teachers who died in service and a group of two hundred nonteachers on the basis of cause of death.

Cause of Death	Percent of Teachers*	Percent of Nonteachers*
Infectious diseases	15	14
Intoxications (such as food poisoning)	1	0
Metabolism, diabetes, etc.	1	4
Digestive system	12	7
Respiratory system	3	2
Kidneys	5	5
Blood-forming organs (anemia, etc.)	1	1
Circulatory system	26	35
Goiter and diseases of endocrine glands	1	1
Brain and nervous system	11	14
Accident	7	6
Suicide	5	3
Unclassified cancer	12	8
Miscellaneous	4	2

* Figures rounded to nearest whole number.

From the foregoing data it does not appear that striking differences between teacher and nonteacher mortality are apparent.

Stable Teachers Needed

Helen Cook Newman, M.D., school physician for the University of Chicago Laboratory School, says that schools must face honestly the problem of supplying classroom teachers who can reasonably be expected to co-operate in promoting the mental health of their pupils.

"Ironically, realization of the importance of teachers to the emotional help of children grows at a time when the shortage of teachers has reached alarming proportions," says Dr. Newman.

Dr. Newman believes that mental hygiene in the classroom today faces encouraging developments in teacher procurement and stability. The periodic examinations of teachers offers hope for the prevention of both physical and emotional disorders. The training of teachers has improved with the increase

in knowledge in the fields of education, psychology, and child development. The composition of the teaching profession is changing so that more men and women with grown children are now teaching in the schools. Psychologists, medical personnel, and social workers are becoming more and more accepted as part of the educational team and there is a growing appreciation, especially in the field of psychiatry, of the importance of schools in case-finding and promotion of treatment. This should ultimately lead to a decrease in juvenile problems with a consequent improvement in the mental hygiene of the adult population.

Dr. Newman says that good mental health is a positive state of well-feeling which so completely encompasses the individual that it spills over and pervades his environment, making the neighborhood of that person a good place in which to be.

362***Mental Health of the Teacher***

Cyril C. O'Brien, Ph.D., of Milwaukee, Wisconsin, says the mental health of the teacher should be a matter of concern to school boards and school administrative officials for many reasons.

There is an increasing need for teachers at all levels of the educational ladder. Teachers are leaving the profession, not only for financial reasons, but to take positions that do not demand the emotional strain of the average teaching position.

Administrators can help teachers maintain good emotional health by supporting them against unreasonable attitudes of parents, by an efficient organization that provides for adequate referrals of, and corrective measures for, fractious students, and by providing ample scope for professional growth and its recognition in a financial way.

The teacher should not bear all of the responsibility for a lack of classroom morale. The school administration must play its part and share the burden. Overcrowded classes, too heavy a teaching load, and a preponderance of extra-curricular activities may cause the emotional health of a teacher to deteriorate. The beginning teacher should have no difficulty in maintaining a healthy mental outlook in a well-administered school and school system. The best teacher in the world, however, will find it difficult to maintain emotional balance under a school administration which is characterized by cliques, unfair practices, and outmoded educational policies.

363***Mental Health for Teachers***

Louis Jacobs, M.D., a regional mental health consultant of the public health service, stated in 1953 at a session of the American School Health Association in Cleveland that the teacher is very important in the training of emotionally sound individuals.

Much is now being done to give the teacher the information and practice she needs for understanding mental health concepts in the classroom. For graduate teachers, a number of schools have in-service training programs, institutes, and workshops where thousands of teachers receive instruction from psychiatrists, psychologists, and social workers.

Teacher training institutions in general, believes Dr. Jacobs, could make good use of remedial services for persons who will become classroom influences on the emotional health of their charges.

Dr. Jacobs believes that clinical services should be available to the approximately 10 percent of the pupils in elementary and high schools who may need professional help in the field of mental hygiene. Community-wide use of these services is advisable whether the clinic is part of the school system, the local health department, or another community agency.

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Mentally Unbalanced Teachers

Emil Altman, M.D., retired chief medical examiner for the New York Board of Education, stated in 1942 that there were approximately 1,500 emotionally or mentally unbalanced teachers in New York City. He felt that others might also be in need of psychiatric treatment.

In this particular case a teacher was ousted by the Board of Education on the grounds of insanity. The teacher's legal counsel appealed to the courts, but the latter upheld the decision of the Board of Education.

In another instance a mentally unbalanced teacher had been retired by the Board of Education but the retirement board decided the teacher had regained her mental health and ordered her reinstated. The Board of Education refused to reinstate the teacher and the case was carried to the Supreme Court of the State of New York. In this particular case the court ruled that the retirement board could legally order the Board of Education to reinstate the teacher, but the Board of Education need not obey.

Dr. Altman favors health examinations of all teachers every two to three years for the detection of poor physical or mental health. He is also in favor of a number of other measures including stricter observation and selection of teachers before they are given tenure.

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Teaching and Mental Illness

Janet Louise Malloch reported in 1941 on a study of the Agnew State Hospital in California in respect to inmates who had once been teachers. The purpose of the study was to find out whether a disproportionate share of teachers ended in mental institutions as compared with other professions.

It was found that twenty-eight former teachers were in residence at this mental hospital. This number constituted only 4 percent of the once employed

women in the institution. State census figures of this period showed that slightly more than 7 percent of the gainfully employed women in California were teachers.

Information from all the private sanitariums in the same territory served by the Agnew State Hospital showed that the proportion of teachers in these institutions was not significantly different from that at Agnew.

In general, other occupations were much more closely represented among the inmates of Agnew State Hospital in comparison with actual census reports for the state. In other words it was found that there were somewhat fewer teachers in the institution than might have been expected on the basis of other professions.

Case studies of the twenty-eight teacher patients in this investigation showed clearly that the individuals concerned were, for the most part, unsuited for any profession because they were maladjusted before they entered the field of education. The majority of the group were not representative teachers and should never have been granted teaching credentials in the first place. Their backgrounds, marital adjustment, personalities, and general mode of living differed from what is considered a normal way of life. Evidently these former teachers would have developed mental illness regardless of their choice of work.

From this study it was not concluded that education had anything to do with augmenting the mental illness of the teachers at Agnew State Hospital.

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Probationary Teacher Dismissed for Diabetes

In California a Superior Court ruled in 1948 that a board of education had the right to dismiss a temporary schoolteacher for health reasons.

The court turned down the plea of a thirty-four-year-old teacher's attorney that her dismissal because of diabetes should be set aside. The teacher's attorney showed that her diabetic condition was the only grounds for her dismissal as a second-grade teacher.

The judge based his ruling on law aspects of the suit rather than on a showing of the facts. The board contended that although the teacher had an excellent record and was under a doctor's care, daily insulin treatments could cause emotional instability which might affect her teaching efficiency.

A ruling against the board would have uprooted the present practice of placing new teachers on a three-year probationary period and would have made every dismissal subject to court review.

Chapter XIX

Parent and Community Relationships

A Midwestern study shows that the health council is potentially one of the most valuable and most powerful health forces in a community. Comprehensive health education is an important part of any public health program and is greatly stimulated by the presence of a health council in a community.

Most of the health councils in the United States have been organized since 1940. By 1952 it was reported from a two-year nation-wide study that there were 1,190 local health councils and 34 state health councils in the United States. A study of the activities of 276 of these local councils during the years 1947 to 1950 showed that more than 1,000 specific health projects had been undertaken.

In 1947 the Pennsylvania legislature passed an act that made the organization of advisory health councils mandatory in most school districts. The Pennsylvania law states that advisory councils must be composed of representatives of medical and dental associations, social organizations, veterans' organizations, parent-teacher associations, social clubs, and other organizations in the area.

A report in 1954 on a joint school health program in Mississippi shows that major responsibility is carried by the health officer in the field of school health services but that the school administrator has the major responsibility in the field of health education. The effectiveness of the Mississippi program comes from the support of a large group of people in health, education, and welfare services who co-operate in the total plan.

Various studies of the activities of public health departments in school health programs show that in the majority of cases the boards of education represent the administrative authority in such programs. However, participation of public health departments in school health programs has been increasing considerably within recent years.

In North Carolina a joint school health program is financed by the State Health Department and administered by the State Board of Education. This plan was put into operation in 1949. Most of the public health funds are advanced primarily for the correction of defects in children of parents who cannot afford to secure the medical service that is needed. One thousand dollars is allocated to each county in the state regardless of size. In addition, each county or city school district is given fifty cents per pupil in average daily attendance for the first seven months of the previous school year.

In Florida the sentiment has been against the development of separate school health services financed and administered by education agencies. There has been a continuous recent trend to merge school health services with the

activities of the county health departments. Florida laws specify that school funds can be spent by local health services only when the county health department is unable to provide needed services.

A report has been made on the Cutler Project in California where a small rural community participated in a co-operative effort to improve sanitation conditions. The improvement program was based upon an individual and educational approach to members of the community and was judged to be highly successful.

In Richmond, Indiana, a report has been made on a community-wide safety project in which school administrators, policemen, firemen, parent-teacher association members, representatives from the American Red Cross, Junior Chamber of Commerce, service clubs, and other organizations participated in the development of the program.

A speech and hearing program has been described in the state of Delaware in which the State Board of Health acts as the hub of the total program, but in which schools, hospitals, and other agencies participate co-operatively.

From Tennessee there has been reported one of the examples of the effectiveness of education and community participation in the control of rabies. Participation of public health authorities, schools, churches, and veterinarians, along with many other groups of the county, proved to be highly effective in securing the vaccination of 23,000 dogs against rabies within a period of two weeks.

A report has been made upon the use of a community hospital in the school health program.

Attention was called in 1950 to the report of the American Academy of Pediatrics in which it was brought out that school health services by a physician hardly exist in about one-half of the counties in the United States, in which there are about 22 percent of the school-age children. The studies suggest that children in outlying rural areas who are far removed from medical centers are not receiving the full benefits of modern health care.

A report in 1952 from San Francisco describes a demonstration project in which parents completed pupil health inventories for use by school authorities. Over a period of one year the information supplied by parents proved to be highly useful to school authorities in recognizing and doing something about health problems of pupils.

A study of the reasons why parents refuse to have their children skin-tested for tuberculosis gives needed information on this subject.

From Chicago a study was reported in 1948 on the results of a follow-up investigation of medical examinations of 1,068 children. It was shown in this investigation that approximately half of the children who should have had medical attention failed to receive it. The reason most frequently expressed by the families for their failure to obtain the needed medical care was that the children seemed well. Although a number of other factors were

also involved in the failure of the parents to carry out school health recommendations, the major finding of the investigation was that health education of the parents was probably the predominant factor in securing effective co-operation from them.

Long overlooked as a source of service to the community have been the school health possibilities of evening schools. It was reported in 1953 that almost five million adults are enrolled in adult education activities in the United States. A study of public school programs in adult health education has revealed that almost every course offered in this field has been the result of co-operative community planning. Well-planned basic courses in health are apparently being very well received by the adult population. All of the reports indicate a gratifying response to health courses for adults as shown by the numbers of persons in regular attendance and by the decision of the school directors to continue and expand the health education programs.

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The Community Health Council

Bleecker Marquette, of Cincinnati, Ohio, said in 1947 that the health council is potentially one of the most valuable and powerful health forces in a community.

In a Midwestern city where there was no machinery to co-ordinate the many and varied groups carrying on some phase of health work or to plan for the community's health, the city and the county health departments were both woefully understaffed and inadequately financed.

There was no program for prevention of dental decay, and there were no clinics for treatment. In nursing there was a bedside service rendered by insurance companies to their own policyholders but no such service for others; there were some nurses in the health departments but none in the schools. The shortage of nurses was serious in hospitals and in public health agencies.

The schools were just beginning to develop health education.

For the rapidly increasing numbers of chronic cases needing care, the county home provided custody only.

There were no general medical clinics and no mental hygiene clinics. Nothing was being done in a public health way about diabetes, heart disease, nutrition, or social science.

Nobody had a comprehensive picture of the community's specific health needs. There was no organized way of bringing together interested citizens, the professions concerned, and health executives to study and plan for the community health.

Another Midwestern city of not much larger size had had a health council for thirty years. The council was made up of representatives of every official health department, of every voluntary health agency, clinic, and hospital; of the medical, dental, nursing, and pharmacy associations; of civic and social

agencies with a direct public health interest. It had met annually to receive reports on work done and to elect officers and members-at-large to the coordinating committee. This committee was the governing body and met monthly.

In this community the heads of all health agencies were in touch with what other groups were doing, and they joined in continuing study of health problems and programs. In all, there were some 500 people, delegates and division members, participating in the work of the health council.

Programs of the various health agencies were constantly observed and from time to time recommendations for modification of programs were made—always on the basis of careful study and with no attempt to force action on any recommendation.

Research played a vital role. Special studies of problems of agencies and institutions were made as the need developed. The tabulation and analysis of mortality statistics were a continuous function.

It was found at one time that the city's death rate was high from appendicitis. An intensive education campaign, undertaken jointly by the council and the medical society, succeeded over a period of years in reducing the city's rate below the average.

Comprehensive health education was an important part of the program. A health center for Negroes was established where Negro doctors and dentists had their first opportunity locally for clinical experience. A most successful central mental-hygiene clinic had also been promoted.

The council directed successful campaigns for bond issues to provide better facilities for the city hospital and to build a new county home and chronic-disease hospitals. The need of facilities for the care of the chronic sick and the shortage of nurses received intensive study by local groups with a plan of action as the goal.

Support was given to a vigorous public campaign that led to the enactment of a strong ordinance for smoke control. One objective was the development of a master plan for health.

There is no magic in the organization of a health council. If there is no such agency, there can be little chance of any real teamwork among health forces or of intelligent community planning. Where such an agency does exist, there is at least an opportunity for effective co-ordination of effort. The fact that some health councils are getting results shows that in a favorable situation the plan works.

Health planning in the United States—for generations the exclusive province of the health officer, the physician, the welfare worker, and other professionals—is becoming a community activity in which the layman is now

taking a leading part, according to a preliminary report issued by the National Health Council during its thirty-second annual meeting. The report summarizes the findings of a two-year nation-wide study of local and state health councils.

At the time the study was begun there were 1,190 local and 34 state councils, three-fourths of which, it appeared, had been formed since 1940 and more than half since World War II. It is estimated that there are today probably more than 1,300 local councils, and state councils are being formed in three additional states.

On most of the health councils, four different types of organizations and agencies are represented: professional societies, official agencies, voluntary health organizations, and civic groups. The latter groups are the most numerous in the health councils.

A study of the activities of 276 local councils from 1947 to 1950 showed more than 1,000 specific projects undertaken. The projects ranged all the way from starting a county health department and promoting hot lunches in schools to establishing clinics and helping local voluntary health agencies initiate programs.

The 34 state health councils, the report indicates, were formed primarily to determine state-wide health needs, to promote legislation, to arouse public support for proposed health programs, and to encourage joint planning among health organizations for eliminating gaps and overlapping in their current programs.

The National Health Council is an association of forty-two voluntary health and welfare organizations, professional societies, official agencies, and citizens' groups interested in health.

Carl C. Fischer, M.D., of the Hahnemann Medical College and Hospital of Philadelphia, believes that although advisory health councils belong in any complete health program, the members are badly in need of inspired guidance from professional organizations such as the American Public Health Association.

Dr. Fischer reports that in 1947 an act was passed by the Pennsylvania legislature that makes the organization of advisory health councils mandatory in most school districts. This same law specifies that those who make medical and dental examinations of school children must make an annual report to the advisory council and later report on remedial work accomplished during the school year.

The Pennsylvania law states that advisory councils must be composed of representatives of medical and dental associations, social organizations, vet-

erans' organizations, parent-teacher associations, social clubs, and other organizations in the council area.

Dr. Fischer believes that if advisory health councils are to effectively promote the school health program and especially the health education aspects of such a program, it must be composed of all interested groups and not simply the professional groups involved in school medical and dental examinations.

In a follow-up study of the work being done by these advisory councils it was found that first place was being given to the development of a better dental health program, including the establishment of clinics, follow-up procedures, and dental education for parents. The councils were giving second emphasis to the development of health education programs for the school and community with particular emphasis on this aspect of the program for parents of children with health defects. Most of the councils ranked an intensive follow-up with greater financial and treatment resources for the correction of defects as being third in importance. Some councils emphasized other problems such as correction of visual defects, the development of better school lunch programs, the provision of better recreation facilities, improved immunization programs, and the establishment of better mental health facilities.

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School Health Services in Mississippi

Felix J. Underwood, M.D., executive officer of the Mississippi State Board of Health, reported in 1954 on a joint school health program by the Mississippi State Board of Health and the State Department of Education.

Five years after initiation of the program in 1942 the two departments reached agreement as to the division and sharing of work, administrative responsibility, and policy formulation.

It was agreed that joint planning and administration of the school health program should be done by the county health officer with county and local school administrators under guidance and direction of the state service.

It was agreed that the major responsibility should be carried by the health officer in the field of health services and that the school administrator should have the major responsibility in the field of health education.

The small, effective administrative staff of the Mississippi School Health Service consists of a medical director who is well trained in public health work, a co-director who is well trained in educational work, a supervisor of teacher training in health, a supervisor in physical education and recreation, and two secretaries.

The effectiveness of the program comes from a large group of people in health, education, and welfare services who co-operate in the total plan. The co-ordinating activities of the service have been extended to all of the official and voluntary child-caring agencies in Mississippi, such as the Division for

the Blind and the Division of Child Welfare in the Mississippi State Department of Public Welfare and the Mississippi Crippled Children's Service.

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***Local Health Departments and School Health
in California***

Bernice Moss, consultant in school health education, has reported that, in an effort to discover the activities of health departments in school health programs, a questionnaire was submitted by the State Department of Public Health to all full-time California health departments in April 1945. Twenty-seven county departments and ten city departments returned the questionnaire.

Of the full-time health departments replying to the questionnaire, fifteen reported that they were wholly responsible for school health services in all or the major part of the county, and the remainder (twenty-two) reported some responsibilities, ranging from very meager to fairly comprehensive activities.

The most generally accepted responsibilities of health departments in schools were for immunization, communicable-disease control, and supervision of sanitation in school buildings. The least common types of service rendered to schools were nutrition-consultant services and dental services.

In the area of school health education, about half of the health departments reported some relationships with schools. Some health officers and nurses were members of school health education or curriculum committees. Others reported that schools consult them concerning health courses and curricular materials. Members of health department staffs were frequently invited to speak at teacher meetings, including institutes. Some health departments had conducted classes for teachers.

The majority of health departments made teaching materials available to schools, including films, bulletins, pamphlets, charts, and posters, and a few furnished access to books and bibliographies.

About half of the health departments reported some type of physical examination program for school children, with the comment that the war had markedly curtailed this program. The groups most frequently examined were those of children entering schools for the first time, and referrals from teachers or nurses.

With two exceptions, all health departments reported carrying on an immunization program among school children, for smallpox and diphtheria, in both the school and health department clinics.

Few public health nurses taught school classes, but nearly all reported giving help to teachers on health-teaching problems "as requested," or "when asked."

About half of the health departments reported regular annual inspection

of school buildings, and the other half conducted occasional inspections, some only on request or complaint.

Many health departments reported that California schools were requesting or demanding more service than health departments could or should render.

372***School Health Services in North Carolina***

Charles E. Spencer noted in 1952 that North Carolina had a joint school health program which was financed by the State Health Department and administered by the State Board of Education.

This plan was put into operation in 1949, at which time the General Assembly appropriated \$550,000 a year for the extension of the school health program.

The funds were advanced primarily for the correction of defects in children whose parents could not afford to secure the medical service needed.

In most of the cities and counties certification under this plan of financial need of the parents of children with defects is left to the local welfare department. The schools and the health departments, however, co-operate in furnishing any available information they may have.

The State Board of Education allocates the \$550,000 annual appropriation as grants-in-aid to city and county school administrative units for school health work.

One thousand dollars is allocated to each county regardless of size. In addition, each county or city school district is given an amount equal to fifty cents per pupil, based on the average daily attendance for the first seven months of the previous school year.

During the year 1950-51, services to school children from the school health fund included 21,558 medical examinations, 2,504 eye examinations by physicians, and correction of 27,026 defects for children whose parents could not afford to pay. These corrections included 8,393 tonsillectomies, 11,358 dental cases, 711 hearing defects, 46 hernias, 35 orthopedic cases, 1,885 cases of intestinal parasites, 1,426 prescriptions for glasses, and 3,180 other corrections including such things as heart disease, cleft palate, and artificial eyes.

In addition, services from other funds included 27,993 children who had corrections made for defects. Parents themselves paid for the correction of defects in 40,826 children.

373***School Health in Florida***

Wilson T. Sowder, M.D., said in 1953 that sentiment in Florida was against the development of separate school health services financed and administered by education agencies. In the past, many local school boards have provided for

school health services, particularly public health nursing services, but there has been a continuous trend in recent years to discontinue this activity, or to merge such efforts with the county health departments.

In many counties, the board of county commissioners bears the entire local cost of public health services, including school health services, but at present in thirty-nine counties the local school boards make a contribution to the common fund of the health department. This assistance is especially important since it is contributed primarily in the smaller rural counties.

The Florida laws governing the expenditures of school funds provide that these can only be spent for local health services where the county health department is unable to provide needed services. At the present time, in only seven counties are public health personnel employed by school boards other than through county health departments. This personnel consists of nineteen public health nurses and one health educator. In one of these counties, although four public health nurses are paid directly by the local school board, they work under the supervision of the county health officer. In the other counties, they work in close co-operation with the personnel of the county health departments, and it appears that there will be a complete merger of efforts in the future.

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***The Cutler Project: A Demonstration
in Health Education***

Patricia Hill and Marjorie Harrison report that in the summer of 1951, at the request of several residents of Cutler, California, who were concerned about their fly problem, the Tulare County Department of Public Health carried out a demonstration project in one residential area of the town to improve sanitation conditions.

Cutler is a small rural community with a population of around two thousand. This number fluctuates with the seasonal work in the fields, packing plants, and canneries where most of the people, who are predominantly of Mexican descent, work.

The first step in putting the plan into operation was to discuss the proposed program with the residents. Housewives, storekeepers, people who worked in the fields, school administrators, members of organized groups such as civic clubs and churches were asked to come to a meeting to discuss their sanitation problems with members of the health department.

A series of weekly articles emphasizing the relationship of flies and mosquitoes to disease, and methods of controlling these insects through basic sanitation, were carried by a small weekly newspaper which serves the area.

Membership in the Cutler Citizens' Planning Group grew slowly as more residents became interested in the project. At their third meeting the group decided to introduce a survey with a community program featuring outdoor

movies and free watermelon. Because of its central location, an elementary school was selected.

Two days after the community program was held, a house-by-house survey of sanitary conditions was begun by teams composed of a sanitarian, a health educator, and two members of the Cutler Latin-American Club (a newly formed organization of young men of Mexican descent interested in community improvement). Members of the Latin-American Club introduced the sanitarians and health educators to the residents and served as interpreters when necessary. Since most of the population worked in the fields all day, the survey was conducted in the evenings, between six and eight o'clock.

Conditions of environmental sanitation were discussed with each householder. Written materials, printed in Spanish as well as English, were left with certain persons. These described approved types of privy construction and methods of garbage and waste-water disposal. Diagrams illustrating proper construction of privies, seepage pits, and cesspools were included.

Two weeks after the original survey, the area was again studied to determine how many of the suggested corrections were under way. Maps made on the initial survey were used to check progress in eliminating unsanitary conditions. Where corrections had been started or completed, the residents were commended and urged to maintain the corrections. Where corrections had not been started, the violations were again pointed out and the relationship of such conditions to individual and community health re-emphasized.

The success of the program was indicated by the following data obtained from 283 houses on 216 lots:

	Type of Violation				Total
	Privy	Garbage	Animal Pen	Effluent Waste	
Total violations, first survey.....	114	48	14	23	199
Corrections started or completed by time of resurvey	65	28	5	18	116
Percentage of improvements	57	58	36	78	58

375

A Community Project in School Safety

H. W. Houston, of Richmond, Indiana, reports that the school and civic authorities of that industrial community have developed a community-wide project in safety.

School administrators, policemen, firemen, parent-teacher association members, representatives from the American Red Cross, Junior Chamber of Commerce, service clubs, and other organizations participated in the development of the program. A safety co-ordinating council was formed and a sub-committee on bicycle safety was created. A safety council in each school was organized, with both pupils and teachers participating in planning. School

safety patrols were organized in the upper grades and junior high school levels.

The police department assigned one officer to work on full-time duty with school safety programs and a driver-training course was put into the high school program.

The bicycle safety subcommittee recommended police registration of all bicycles, an educational program on bicycle safety, the taping of all bicycles with luminous tape, community passage of a general bicycle ordinance, the establishment of a city-wide bicycle court for youthful offenders, and the distribution of handbooks on bicycle safety to all school children.

After the community-wide safety program had been under way for some time a "bicycle rodeo" was held with a bicycle parade, floats, and other attractions. Various contests were arranged for bicycle riders, and all bicycles were inspected for safety before the admission of any pupil or adult to any of the contests. Awards for sportsmanship and riding skills were made.

376

A Speech and Hearing Program in Delaware

Jack Sabloff and L. LeRoy Horn report that in the state of Delaware public health and educational authorities have combined to develop a speech and hearing program with major emphasis on the preschool group of children.

The Delaware program in speech and hearing began in 1946 when a speech therapist was added to the staff of the Division of Crippled Children's Services to provide speech therapy for cerebral-palsied children. The need of a speech program for other children was soon apparent and the program was broadened to provide more extensive service.

It soon became evident that a large share of speech problems were linked with hearing disorders. Audiologists were added to the staff of the public health department and the program broadened to that of a speech and hearing one.

In the city of Wilmington, Delaware, a separate program of speech and hearing exists under the Board of Education. The school staff for this program consists of four speech correctionists, one speech reading teacher, and one teacher of the deaf for a school population of approximately 12,000. The State Department of Public Instruction serves the rest of the state with a supervisor of special education and six speech correctionists.

In February 1951 the Delaware Hospital in Wilmington established the Delaware Hospital Audiology and Speech Center for diagnostic and treatment services under partial auspices of the Crippled Children's Hearing Program. Close liaison is maintained with the Department of Otolaryngology.

The speech and hearing program in Delaware now has three major elements as follows: the program of the State Board of Health which deals mostly with preschool children; the school programs consisting of the Wilmington City Program and the State Department of Instruction program,

which deals mostly with school children; and the program of the Audiology and Speech Center of the Delaware Hospital with services available to all children and adults, either on a clinic or private basis.

Emphasis is placed on integration of the State Board of Health program with the school program. The school acts as a case-finding agency with main reliance upon teacher-nurse referral although routine audiometric testing is done in some school areas. Whenever a child is referred by a teacher or nurse a pure-tone audiometric test is performed on the child. Further studies are done under the Board of Health program.

School children are referred for study because of speech deviation, inattention, history of ear infection, suspected hearing impairments, or other reasons.

Preschool children needing attention are located by the State Department of Health through its relationships with pediatricians, otologists, public health nurses, psychologists, parent groups, and welfare agencies.

The State Board of Health acts as the hub of the total program and arranges for proper testing, hearing aid selection, medical treatment or surgery if this is needed, and complete rehabilitation including speech therapy, auditory training, speech reading, counseling, and mental hygiene.

The entire program is based upon the philosophy that diagnostic services that do not offer re-educative processes will not meet the speech and hearing needs of the child or adult.

377 *School Participation in a Rabies Control Program*

Tierkel, Graves, Tugle, and Wadley reported in 1950 regarding the control measures that were effective in stopping an epidemic of rabies in a rural county of Tennessee.

Public health authorities immediately invoked a strict dog quarantine that required all dogs to be confined to the home or walked on a leash when out of doors. A meeting of health department representatives with city and county commissioners led to the decision to vaccinate the dog population on a voluntary basis.

Schools and churches were asked to participate actively in health education of the community on the subject of rabies and the necessity of having their dogs vaccinated against this disease.

Dog vaccination clinics were established and all fifteen licensed veterinarians of the county willingly participated in the program to vaccinate all dogs against rabies.

Thirty-six dog-inoculation clinics were set up in towns for three-day periods. A charge of one dollar per dog was established to cover the cost of the vaccine. Health department employees furnished clerical assistance, local newspapers gave liberal publicity to the campaign, and educators and church

leaders assumed a major responsibility for educating children and parents to the need for the program.

After one week of preparation and one week of operation at an administrative cost of \$450, which was borne by the local and county health departments, a total of 23,000 dogs, or 80 percent of the county dog population, was vaccinated.

In the following months not one single case of rabies was reported.

378***School Visits to Hospitals***

Louis Miller and Sidney Wallach gave an account in 1951 of an experiment in community education undertaken at the Jewish Memorial Hospital of New York City.

This experiment consisted of bringing the older grade school and high school pupils to the hospital on conducted tours, and, by suitable programs, of extending the memory and effect of the organized visit. Another purpose of the tour was to eliminate the fear of hospitals that is very often found among children.

The plan began with two groups of children who were brought to the hospital, shown its equipment, its organization, its clinics, laboratories, library, and other facilities. There followed a discussion on what they had seen. The children themselves had occasion later to write school compositions about their visit. These comments were most favorable and indicated a definite change in attitude, and an understanding of the hospitals. Later, the project was extended to a broader scope.

A newsletter was published and sent to citizens and school personnel as well as health and other educational organizations. Response to the project was very favorable. A number of activities were devised in the schools for sustaining interest in the subject. On the basis of these reactions, hospital authorities began to expand and to intensify the program under the two concepts, "Know your hospital" and "Freedom from fear of the hospital."

379***Highlights of the American Academy of Pediatrics Study***

John P. Hubbard, M.D., director of the American Academy of Pediatrics, reported in 1950 on aspects of the study of child health services conducted by the Public Health Service, the Children's Bureau, and the American Academy of Pediatrics.

A significant finding of the study was that three-fourths of the private medical care of children was in the hands of general practitioners. One-third of the average day's work of the general practitioner was taken up in care of

children. Yet the general practitioner has little opportunity for training in the medical care of children, according to Dr. Hubbard.

Today, health supervision of the well child is the major part of the pediatrician's daily work. During the course of the study it was found that 54 percent of the pediatrician's visits on an average day was for health supervision of well children, 43 percent for the care of sick children, and the remaining 3 percent for persons of fifteen years or older.

The general practitioner gave relatively less attention to health supervision. Presumably, his time was in greater demand for the care of the sick. Thus, only 9 percent of the general practitioner's visits to all patients was for health supervision of the well child. An additional 21 percent of the general practitioner's daily visits was for sick children. Nevertheless, it is the general practitioners who, because of their numbers, give most of the health supervision for the nation's children.

There is no question that increasing attention in medical education should be given to preventive aspects of disease and supervision of normal growth and development.

Another of the study's highlights was inescapable. Children in outlying areas, far removed from medical centers, were not receiving the full benefits of modern medical care.

Despite all the increase that has occurred in the amount of service given by both private and public health agencies, it was startling to note that only 1.5 percent of the total volume of child care was given by these agencies.

During the year of the study there were 160,000 well-child conferences held, which would seem to add up to a reasonably adequate service. However, only 6 percent of the country's infants and preschool children received any services from these well-child conferences.

School health services by a physician hardly existed in over half of the counties in the United States, in which were found 22 percent of the school-age children. A few more counties had some school nursing service, but 11 percent of the school-age population had neither medical nor nursing school health services.

380

Pupil Health Inventories by Parents

Charlotte Singer-Brooks, M.D., of San Francisco, California, reported in 1952 that during a community school health education demonstration project in San Francisco a form called the Health Inventory was co-operatively prepared to obtain from parents an appraisal of the physical and emotional health status of their children.

Although much skepticism was voiced with regard to the willingness of parents to co-operate in supplying the information in this manner, and to the

reliability of such information, it was decided to use the Health Inventory on a trial basis in a project elementary school of six hundred pupils.

After the parents completed the forms and returned them to the school, the data were tabulated and evaluated over a period of a year. In a teacher evaluation of the health inventory, 99 percent of the teachers indicated that the information provided by parents was helpful.

The areas of the Health Inventory which were helpful to over 50 percent of the teachers were the sections relating to (a) emotional health, (b) signs and symptoms pertaining to health recently noted by parents, (c) history of past illness, and (d) health practices.

Approximately 75 percent of the teachers surveyed indicated that they had used the information for referral of children to health services, for teaching purposes, and for teacher-nurse conferences. Fifty percent also utilized the information for teacher-parent conferences, and 24 percent used it for counseling.

381

Parent Objections to Tuberculin Testing

Orren Lloyd-Jones reported in 1940 on the results obtained from a study to discover why some parents refuse to have their children skin-tested for tuberculosis.

At that time in Los Angeles, California, tuberculin testing in the school was being carried on after obtaining parental consent for the test.

A statistical analysis was made of 1,432 refusals by parents. The reasons why parents would not let their children take the tuberculin test were found to be as follows:

Reason	Percent
1. Parental belief the test was unnecessary.....	28.7
2. Reliance on private physician.....	27.0
3. Previous examination for tuberculosis.....	13.6
4. Religious beliefs	14.5
5. Lack of belief in tests on other than religious grounds	12.0
6. Other reasons	4.2
Total.....	100.0

382

Failures in Following Medical Recommendations

Martha Crumpton Hardy, Ph.D., of Chicago, appraised in 1948 the results of a follow-up study of medical examinations of 1,068 children.

The follow-up involved three procedures: assisting the family to plan ways and means of securing advised health services; checking with families from

time to time to urge that appointments with physicians and clinics be kept; and, finally, checking with the health agencies on the amount of medical care actually secured.

In spite of some effort on the part of most families represented in this investigation, approximately half of the children who should have had medical attention failed to receive it. One or more children from 53 percent of the families secured none of the medical service advised.

The reason most frequently expressed by the families for their failure to obtain the needed medical care was that the children seemed well. The parents believed that the recommended health services were really not necessary because the children had no special complaints. In some of these cases the mother indicated that the symptoms for which medical attention had been advised were still present but did not bother the child, or it was thought they would be outgrown.

Many parents complained of the numerous visits to different specialized clinics before the advised care for even one child could be carried out.

Although distance from medical facilities was a seriously complicating factor in many instances, in none of the families did it appear to be a major factor involved in the extent to which recommendations for medical care were carried out.

Long waits in physicians' offices and in outpatient departments of hospitals were of common occurrence. The waiting periods for many of these families were frequently exceedingly long. In addition to the time involved there was the restlessness and discomfort of the children, as the rooms in which they waited were often overcrowded, with hard benches the only seating arrangement. Then, too, after the family had received some medical attention, if hospitalization or surgical treatment were required, immediate care was usually not possible. The case would be placed on a waiting list. These conditions tended to discourage even the most co-operative parents. For those who were not thoroughly convinced of the need for medical service, this was sufficient reason for doing nothing about the recommendations.

A few of the families refused to permit the remedial measures recommended. Surgical intervention was the service usually opposed by these families.

From information obtained from the mothers it would thus appear that the reasons for failures to meet the health needs of this group of Chicago children are to be found in the cumulative effects of a series of difficult situations, together with little real appreciation on the part of the family of the value of early remedial care.

The results of this study would seem to point to the importance of health education and particularly of adequate interpretation at the time a physical examination is made and continuously over the period of treatment, so that

the relationship of remedial care to good health may be more generally understood.

383

School Health for Adults

Elizabeth S. Avery, consultant in health education for the American Association of Health, Physical Education, and Recreation, points out that almost five million adults are enrolled in adult education activities in the United States.

A study of public school programs in adult health education revealed that almost every course offered in this field was the result of co-operative community planning. The medical society and the health department were active agents in the presentation of certain of the health courses for adults. The programs included courses in child development, geriatrics, first aid, and special health problems.

All of the reports indicated a gratifying response to these health courses for adults, as shown by the numbers in regular attendance and by the decision of the school directors to continue and expand the program.

Health interests of the community ranged from prenatal care to geriatrics and from first aid to mental hygiene. A review of courses offered for adult health education in representative communities revealed such offerings as first aid, home nursing, mental health, the problems of growing old, nutrition, child care, parent craft, community health problems, child development, disease prevention, the economics of health, human relations, and problems of family living.

Most of the present offerings in adult health education provided rather superficial treatment of a variety of specific areas. A well-planned, basic course in disease prevention and control, or in nutrition, or in child health might provide a foundation for additional related courses.

Chapter XX

International Experiences in School Health

An Expert Committee on School Health Services that met in Geneva, Switzerland, in 1950 agreed that the promotion of health for school-age children involves many factors, including environmental hygiene, nutrition, school schedules, safety control, health of the school personnel, communicable disease control, mental health, physical activities, and health instruction. It was emphasized that adequate appraisal of the health of the school child calls for continuous rather than sporadic observation, and that the parts played by the parent and the teacher are most important.

The Expert Committee also recommended that school services should be organized as team projects involving parents, the community, professional groups, and social agencies, and that it should be a direct continuation of pre-school services. It was urged that, especially in underdeveloped regions, schools should serve as public health demonstration centers to set educational examples for the community.

In Mexico and a number of other foreign countries health services to rural schools are provided by physicians in training, by sanitary inspectors, and other auxiliary personnel. In New Zealand the school dental nurse serves as a full-fledged dentist, providing services to school children throughout the nation.

The national government in Sweden began in 1946 to contribute at least half the cost of the health services in all schools. Payments are now made to the district school boards providing they conform to certain regulations. Physicians and nurses must be employed in all schools receiving government aid. Each nurse must have no more than 1,500 children in her care. Health services in Sweden have been extended also in the intermediate and secondary schools as well as in the normal schools.

In Denmark a law was passed in 1946 requiring examinations for tuberculosis of school staffs each year. During a period of seven years 26 persons were found to be suffering from active tuberculosis and 256 others showed suspicious signs of tuberculosis and were kept under special supervision.

It is reported from Sweden that between the years 1945 and 1952 about 40,000 children were vaccinated against tuberculosis with BCG vaccine in Stockholm.

Between 1944 and 1946 there were sixty-five cases of tuberculosis that occurred among school teachers in Sweden. In one instance a substitute teacher infected another teacher and sixteen scholars in less than three months. In 1952 a motion was presented to the Swedish Parliament to pass a law compelling all teachers to undergo chest X-rays at least every other year.

A study in Liberia indicates that tuberculosis is not a major health problem

in that country but that certain tropical diseases are a more serious health menace.

Epidemics of tuberculosis have been reported as having occurred in two Japanese elementary schools. A tuberculosis center for British students was opened in Berkshire in 1953.

The Institute of Inter-American Affairs has pointed out that simple goiter is a problem of great prevalence and antiquity in Colombia. From 56 to 72 percent of the school children in various cities and departments of the country were found to be afflicted by goiter in one study. Maladjustments were seen in the intellectual and physical development of the school children in regions where goiter has been a long-standing problem. Extensive surveys since 1949 have shown that goiter is also a serious public health problem in Guatemala, El Salvador, Honduras, and Panama. The governments of these countries are moving vigorously to improve the situation.

In New Zealand an extensive dental health program is carried on within the schools as part of a much broader program for the country as a whole. Some critical comments have been made regarding the New Zealand school dental services by a representative of the American Dental Association. The aim of the school dental service in this nation is to provide dental care for all preschool and school children until they reach the age of thirteen years. Each school dental nurse is assigned five hundred children for whom she is to provide dental care at six-month intervals.

It was reported in 1951 that in Oslo, Norway, approximately one percent of the total tax money was being spent on a dental health program for children. School dental services were being provided for 97 percent of the school children free of charge. Greater Oslo now has a dental clinic in almost every school.

It is reported that in Denmark school dental services are considered among the most worth-while social reforms of the country. Eighty-three of Denmark's 85 towns and 385 of her 1,300 parishes have school dental programs. School dentists are public officers and about 80 percent of the school children receive dental service.

A report on student health services in England in 1953 shows that the extent of the health services available to students in various schools and colleges in that country differ greatly. The most highly developed student health service in London is at University College.

An Expert Committee on School Health Services met in Geneva, Switzerland, from August 7 to 12, 1950, to consider the health needs of school-age children, and to prepare an outline of the basic policies and approaches for the establishment of improved school health services.

Discussion of the development of school health services was organized under four headings: planning, health promotion, health appraisal, and health restoration. With regard to planning, stress was laid on the need for co-operation with parents and community agencies and for integration with other services wherever possible.

It was agreed that promotion of health for school-age children involves many factors, including environmental hygiene, nutrition, school schedule, safety control, health of school personnel, communicable disease control, mental health, directed physical activities, and health instruction. The school serves as a means rather than an end in many of these problems.

Adequate appraisal of the health of the school child calls for continuous rather than sporadic observation, and the parts played by the parent and the teacher are most important. This type of appraisal should be supplemented by periodic physical examinations, performed by a school physician, and follow-through by a school nurse. In some areas most of the burden will fall upon the teacher, who may or may not have the assistance of a nurse.

Restoration of the health of the child entails provision of treatment facilities, family co-operation, and special care for the handicapped child.

385***Rural Health Programs in Different Nations***

Medical education in Mexico is financed entirely by the government so that many rural young people, who would otherwise not be able to afford it, can be trained as physicians. A government regulation requires that every graduate must serve a so-called "period of social service" in a rural community for at least one year following his hospital internship.

In most foreign countries steps have been taken to make health services available to rural people through the extensive training of auxiliary personnel. In Peru, for example, a number of so-called "sanitary inspectors" have been trained to render minimal services in the villages along the Amazon and other rivers. In the isolated villages these health workers promote sanitary practices and handle the common disease problems, but difficult cases are referred to doctors who come periodically on "dispensary launches." The sanitary inspectors themselves travel from village to village by canoe. The same general type of pattern is followed in many parts of Africa.

In New Zealand the school dental nurse serves as a full-fledged dentist, providing services to school children throughout the nation.

386***Schools as Public Health Demonstration Centers***

An Expert Committee on School Health Services, meeting in Geneva, Switzerland, in August 1950, stressed the belief that schools everywhere, but particularly in underdeveloped regions, should serve as public health demon-

stration centers, not only to promote the child's health but also to set an educational example for the community.

The committee urged that school services should be organized as team projects involving parents, the community, professional groups, and social agencies, and that they should be a direct continuation of preschool services.

The suggested minimum continuous functions to be performed by the school health services, according to the committee, are medical supervision and dental hygiene, communicable disease control, nutrition, mental health, and education.

387***Sweden Improves School Health Work***

Anna Kalet Smith, of the United States Children's Bureau, reported in 1946 that under a new school health law in Sweden the national government had begun to contribute at least half the cost of the health services in all schools, both urban and rural. Payments are now made to the district school boards providing they conform to certain regulations.

Physicians and nurses must be employed in all schools receiving government aid and great stress is placed on the prevention of disease through regular physical examinations.

A concerted effort to discover tuberculosis in the schools is being made. Tuberculin tests are given to all new pupils and to those in whom the tuberculin reaction is not known. Pupils with positive reactions are referred to X-ray clinics.

All teachers and school employees must report any previous tuberculosis and are required to submit to a medical examination.

For the first time under the new law medical attention is given to mental disorders and retarded pupils. The school physician is required to advise the principal about such cases.

A uniform medical record must be kept for all children and it follows the pupil from grade to grade and from school to school. Copies of all the records are collected at the National Board of Education where data are compiled for the study of the results of school health work.

An annual report must be submitted to the school authorities by the school physician. In the elementary schools where the district population is less than 20,000 the public health nurse serves as a part-time school nurse. In communities of more than 20,000 persons full-time school nurses are required. Each nurse may have no more than 1,500 children in her care.

School authorities may order a medical examination of any child at any time, but routine medical examinations are given in the lowest, middle, and highest grades of the elementary schools.

Health services have been extended also in the intermediate and secondary schools and in normal schools.

388 *Examination of Danish Teachers for Tuberculosis*

The foreign correspondent of the American Medical Association has reported that in Denmark a law was passed on July 12, 1946, requiring examinations for tuberculosis of school staffs each year.

Over a seven-year period medical examinations were extended not only to teachers but also to school physicians, school dentists, the kitchen staffs of schools, and everyone else coming within the school system and in direct or indirect touch with school children.

In the first year 4,000 persons were examined, and in the last year of the study 5,518 were examined and tested for tuberculosis. Throughout these seven years 26 persons were found to be suffering from active tuberculosis. This is a rate of 0.81 per thousand. In the same seven years 256 persons were kept under special supervision because of suspicious signs of tuberculosis.

School personnel who were found to be tuberculin-negative were vaccinated against tuberculosis with BCG.

389 *BCG Vaccination of Swedish School Children*

The foreign correspondent of the American Medical Association in Sweden reports that between the years 1945 and 1952 about 40,000 children were vaccinated against tuberculosis with BCG vaccine in Stockholm.

It was found that about 90 percent of the school children still had a positive reaction to the tuberculin test and were judged to have a relatively effective immunity some seven to eight years after being vaccinated. This led Swedish authorities to conclude that vaccination against tuberculosis of the youngest school classes did not need to be repeated during the school term.

Approximately 5 percent of the children who were not vaccinated with BCG developed active tuberculosis, whereas among the BCG-vaccinated children only 0.16 percent developed the disease. From this study it would appear that vaccination against tuberculosis can be highly effective in preventing the development of active disease.

It was also concluded that it would be well to vaccinate children against tuberculosis before they begin school, since 24 percent of those who had not been immunized spontaneously developed positive reactions to the tuberculin test, indicating the relatively high risk of infection during the first school year.

390 *Tuberculosis in Swedish Schoolteachers*

A foreign correspondent of the American Medical Association has reported that between 1944 and 1946 there were sixty-five cases of tuberculosis

that occurred among schoolteachers in Sweden. In 1943 a manual-training teacher infected eight boys between the ages of twelve and fourteen, and in 1945 a substitute teacher in less than three months infected another teacher and sixteen scholars.

A motion was presented to the Swedish Parliament in 1952 recommending that a law be passed to compel all teachers to undergo chest X-rays at least every other year and probably every year, with even more frequent examinations when special conditions called for them.

391 *Tuberculin Patch Test Among School Children in Liberia*

Hildrus A. Poindexter, of the United States Public Health Mission to Liberia, reports that, since 1947, 8,551 children of school age in Liberia were given Vollmer tuberculin patch tests. Of this number 736 gave positive reactions, which comprised 9 percent of the group. Subsequent study, however, revealed that only 3 of the pupils suffered from active pulmonary tuberculosis.

As compared to the prevalence of certain tropical diseases, it was concluded that tuberculosis in 1947 was not among the major health hazards in Liberia.

392 *Tuberculosis in Two Japanese Schools*

The foreign correspondent of the American Medical Association in Japan reported in 1952 that epidemics of tuberculosis occurred in two Japanese elementary schools.

In 1950 two students in one school died of meningitis and tuberculosis. A tuberculosis examination performed on all children in this school revealed that thirty-four children of this class and one of another class of the same grade were found to have active tuberculosis.

All of these children were immediately put into an emergency hospital for isolation, adequate rest, and treatment.

The two students who died were not considered as the source of the infection, nor were the teachers, who were found to be healthy. One boy, however, was found with advanced tuberculosis and he was judged to be the source of the disease.

Another epidemic of tuberculosis which occurred in a different school was being investigated at the time of this report. Teams of physicians of the Anti-Tuberculosis Association were dispatched to the schools in order to clarify the source of the infection and give complete care to the children, all of whom were probably going to recover.

393

A Tuberculosis Center for British Students

The foreign correspondent of the American Medical Association has reported from London that 0.2 percent of all students and 0.9 percent of medical students in Great Britain developed tuberculosis in a sufficiently severe form to lead to interference with their courses of study.

In 1950 an appeal was launched for money to establish a center for tuberculous students in which the pupils could receive medical treatment for the disease while continuing their studies.

By 1953 sufficient funds had been raised to open a small experimental unit for full-time students in Berkshire. The unit will have accommodations for sixteen patients.

Admission will be restricted to pupils who are recovering satisfactorily from the disease and are noninfectious so far as the sputum is concerned. The pupils must also be able to carry on light duties for themselves, such as making beds and taking meals at the table.

394

Simple Goiter in Colombia

The Institute of Inter-American Affairs points out that simple goiter is a problem of great prevalence and antiquity in Colombia.

About 72 percent of the school children have simple goiter in the town of Capitanejo, Department of Santander. A survey by the Co-operative Health Service of 140,613 school children in Santander and nine other departments of Colombia where goiter is most prevalent showed that 79,505, or 56.5 percent, were affected.

In some regions of Colombia, principally where goiter is of more than one hundred years' standing, maladjustments are seen in the intellectual and physical development of the school children. Stature of children afflicted with goiter is inferior to that of the average of the normal children. The disastrous effects on the mental development extend along the scale from the mentally retarded and the "slow" child to the cretin and the idiot.

Both Atlantic and Pacific seacoasts are almost free from goiter, the incidence in those regions being less than 5 percent. In the interior of the country, it is more than 50 percent.

Colombia's mountains of salt have been mined for centuries by the natives before the Conquest, by the Spaniards, and by the government of the republic, but the salt is lacking in the important element of iodine. Studies have shown that all but two of the samples of salt analyzed had insufficient iodine content.

It was decided as a result of the studies that the best course to follow would be the artificial iodization of the salt from the mines which supplied all departments in the interior of the republic.

It was not until February 1946 that studies on the artificial iodization of

salt were started. The cost for the iodization of salt will amount to about twelve centavos (approximately six cents) a year each for the inhabitants of the interior regions.

395

Goiter in El Salvador School Children

Drs. Cabezas, Pineda, and Scrimshaw report that extensive surveys since 1949 have shown that endemic goiter is a serious public health problem in Guatemala, El Salvador, Honduras, and Panama.

The present report is based upon the medical examination of nearly 35,000 school children in both urban and rural areas in El Salvador. School children of all ages in both public and private schools were examined in the capitals of all fourteen departments and, when possible, children in other localities were also studied. About 5 percent of the total number of school children were thus examined.

Approximately 6 percent of the school children had visibly enlarged thyroids, although this was a relatively small percentage of the children who had goiter. Of the children examined, about 23 percent were found to be suffering from goiter. On the basis of the sample studied, it is estimated that a total of 119,000 school children in El Salvador are suffering from endemic goiter out of a total school population of 673,000. Endemic goiter is thus a serious public health problem in El Salvador, and the iodization of all salt for human consumption is recommended.

The salt used in El Salvador is entirely derived from the sea and crystallized by evaporation by the sun and further drying with artificial heat. The average iodine content of this salt as determined by the laboratories of the Institute of Nutrition of Central America and Panama is 0.22 parts per 10,000 of salt, whereas the quantity recommended in salt to prevent endemic goiter under ordinary circumstances is 1 part of iodine per 10,000 parts of salt. It can thus be seen that there is a serious deficiency of iodine in the salt consumed in this country.

396

Dental Health Services in New Zealand

J. Llewellyn Saunders, director of the Division of Dental Hygiene of the New Zealand Department of Health, reports that the dental program in that country involves the public hospital dental services, the armed forces dental services, and the New Zealand national dental service.

School dental health nurses are employed, and they undertake certain types of treatment.

Official statistics show a steady reduction from 114 extractions per 100 fillings in 1922 to approximately 6 per 100 fillings after 1946.

Examination in 1930-31 and in 1948-49 of two groups of children aged from two to eight years has shown a reduction in the decayed, missing, and filled rate (DMF) from approximately 52 to 27—a significant reduction.

397

Dental Health in New Zealand

Allen O. Gruebbel, D.D.S., of Chicago, in February 1950 was sent to New Zealand by the American Dental Association to make an objective and comprehensive study of dental public health services in New Zealand.

Dr. Gruebbel's conclusions were as follows:

1. Dental health problems of children and youth in New Zealand are as great or greater than in any other country for which data have been reported. The dental decay is at least twice as high as in most areas in the United States.

2. The adoption of the dental nurse plan and adolescent dental scheme is in keeping with the way of life in New Zealand, which for many years has been based on the concept that the state rather than the individual has a primary responsibility for all of the essential needs of the individual.

3. The universal dental care plan for children in New Zealand served as a beginning for a large-scale system of state dentistry.

4. Dental services in New Zealand are dominated largely by representatives of the government.

5. Dentistry for children is almost completely neglected by the dental profession in New Zealand, and, until about 1947, was not taught in the dental school.

6. The deliberate effort to create a subprofessional outlook and attitude among school dental nurses is paradoxical and illogical. School dental nurses render operative and surgical services in the mouth without sufficient knowledge of the relationship between oral health and general health. There is almost no technical supervision of operations performed by the school dental nurse.

7. Parents in New Zealand have a false sense of security regarding the dental health of their children because of their belief that dental health needs are being met.

8. The dental profession in New Zealand, at the present time, insists that the school dental nurses are fully qualified to render services to children, but that they are not qualified to render services to the adolescent. The argument presented is that the dental needs of youths between the ages of thirteen and sixteen are more likely to require the services of a dentist.

9. There are many signs in New Zealand that the almost complete dependence of the individual on the state for personal needs has caused enormous economic, industrial, and social problems and has deteriorated such desirable human qualities as self-reliance and ambition.

10. Political, economic, and cultural consequences of socialism are strikingly evident in New Zealand.

398

School Dental Services in New Zealand

Allen O. Gruebbel, D.D.S., of Chicago, reports that dental treatment of children in the schools of New Zealand is not compulsory.

Dental clinics financed by the health department are placed in or near public school buildings. During 1950 there were 508 dental clinics in operation—32 new ones having been established in 1949.

The aim of the school dental service is to provide dental care for all pre-school and school children until they reach the age of thirteen years.

All preschool children and all children in primary schools up to the age of thirteen years are eligible for dental care at the expense of the state under the school dental service. The only requirement is the consent of the parents, which must be in writing.

Each school dental nurse is assigned five hundred children for whom she is to provide dental care at six-month intervals. She provides the following services: copper-amalgam, silver, or cement fillings in primary teeth; extraction of primary and permanent teeth with the use of anesthesia; cleaning of teeth; and dental health education.

The method of giving topical fluoride treatments is taught to the students now in training, but the procedure has not thus far been incorporated into the school dental service.

In most cases, children are referred to a fully trained dentist only in a case of serious emergency.

Orthodontic treatment, including the extraction of teeth to relieve overcrowding, is not covered by special dental practice. If the dentist takes X-rays or extracts a tooth to relieve overcrowding, it is done at the expense of the parents.

The work of the school dental nurse is under the immediate supervision of the principal dental officer in the district. This supervision consists of an inspection to determine cleanliness and general appearance of the school dental clinic, accuracy of the records kept, inspection of operative dentistry by examination of ten to twelve children, and consultation with the headmaster of the school to check on the general behavior and action of the school dental nurses.

There are approximately three hundred twenty thousand children in New Zealand between the ages of three and thirteen years. All children in this age group are eligible for dental care provided by the school dental nurse. Less than one percent are treated by private dentists.

The present cost for constructing new school dental clinics ranges from

about \$2,800 to \$4,200. An additional \$700 per clinic is needed for instruments and equipment.

In respect to the quality of the dental service received, an analysis of 3,220 fillings reveals that approximately 28 percent were defective for one or more reasons.

399

School Dental Services in Scandinavia

Dr. C. L. Sebelius of the Tennessee Department of Public Health reports from his observations abroad that the municipality of Oslo, Norway, spends approximately one percent of its total tax money on a dental health program for children. School dental services, which were initiated in 1910, take care of 97 percent of the school children free of charge. Greater Oslo now has a dental clinic in almost every school.

Sweden's public dental service began in 1939. The state provides money for equipping clinics and subsidizes treatment on a per child basis, grants being larger in rural areas than in cities. The school dental service in Stockholm comprises 50 clinics and is served by 90 dentists.

In Denmark, school dental services are considered among the most worthwhile social reforms of the country. Eighty-three of Denmark's 85 towns and 385 of her 1,300 parishes have school dental programs. School dentists are public officers, and private dentists are paid on a per child basis. About 80 percent of the school children now receive dental service; in Copenhagen, where there are 80,000 school children, 96 percent are cared for by the government service.

400

Student Health Services in England

The London correspondent of the American Medical Association reports that the Royal College of Physicians issued a report in January 1953 on student health services in England.

In London the extent of the health services available to students in the various schools and colleges differs greatly. In the medical schools all students can obtain treatment and advice from members of the hospital staff. The position with regard to nonmedical students, however, is much less satisfactory.

The most highly developed student health service in London is at University College. Here there is a student health association governed by a committee consisting of six staff members, six students, and financed partly by the college and partly by compulsory student contribution each year.

The association runs a health center with a medical, dental, and nursing staff, and provides surgery for minor illnesses and injuries. Special services

such as in psychiatry and dentistry are also available. X-ray service and a voluntary health examination can also be obtained.

Many nonmedical schools and colleges have little in the way of facilities. Most have access to mass radiography and some of the schools have part-time nurses, but the general attitude is either that there is no demand from the students themselves or that there is no need for any other arrangements outside of the National Health Service.

London University, according to the report, has more students living in lodgings than any other university or all the other universities put together, but has the least amount of college health services.

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Research Quarterly (20)
Safety Education (9)
Safety Exchange (1)
San Francisco Chronicle (1)
San Francisco News (3)
School Management (1)
School Nurses Manual (Sonoma County, California) (1)
School and Society (1)
Scientific Monthly (1)
Social Casework (1)
Special Report (President's Commission on Higher Education) (1)
Statistical Bulletin (3)

Teachers College Journal (1)
Texas State Journal of Medicine (1)
Traffic Quarterly (2)
Tuberculosis Abstracts (1)

Understanding the Child (1)
*United States Armed Forces Medical
Journal* (1)

*United States Naval Medical Bulletin,
Supplement* (1)

Victor News (1)
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